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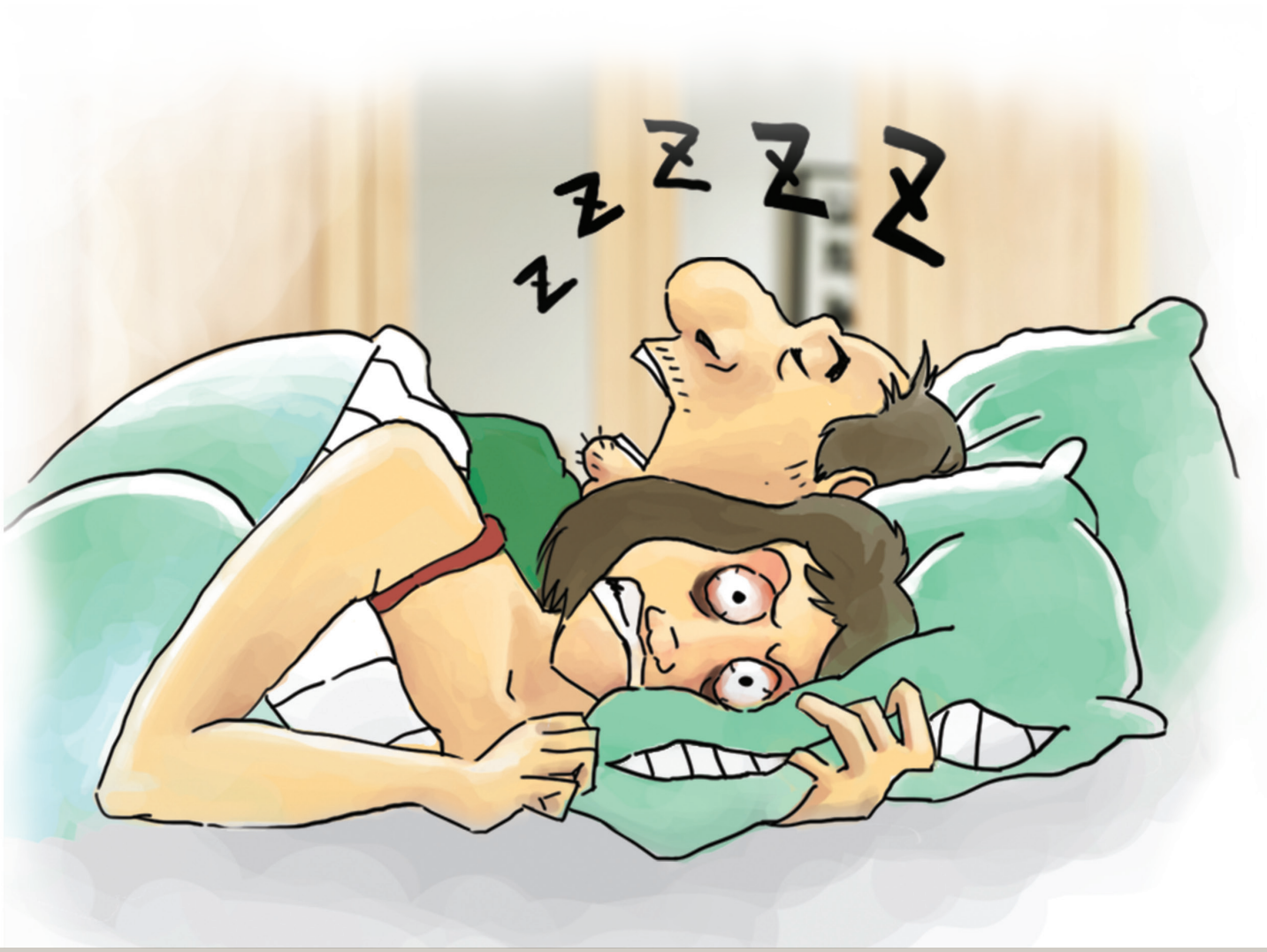

Validation of the Malay version of Berlin questionaire to identify Malaysian patients for obstructive sleep apnea

Generalised pruritus as a presentation of Grave's disease

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  Standardjournal article: Corporate Author International Committee of Medical Journal Editors. Uniform requirements for manuscripts submitted to biomedical journals. N Engl J Med. 1997 Jan 23; 336(4):309-16.
- Books and other monographs: Personal Author(s)Stewart M, Brown JB, Weston WW, et al. Patient-Centered Medicine: Transforming the Clinical Method. Thousand Oaks, California: Sage Publications; 1995.
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EDITORIAL

Publication ethics

Ng CJ, Editor in Chief
Liew SM, Associate Editor

In the past six months, this Journal has received several manuscripts that violated publication ethics. One paper was submitted to another journal concurrently (duplicate submission) while another reported data that overlapped substantially with a paper published by the same author previously (redundant publication).

Authors sometimes submit the same manuscript to two or more journals simultaneously to 'save time'. They would publish their paper in whichever journal that accepts the paper first. This would appear to be an efficient approach to getting the paper published quickly. However, duplicate submission results in the manuscript undergoing peer reviewing and editing by two journals and this is a waste of editors' and reviewers' time and effort. If the manuscript is accepted and published by both journals, there is duplication of publication leading to 'double-counting' of study results which may potentially distort research evidence. Duplicate submission often occurs in authors publishing for the first time who are unaware of publication ethics. Therefore, when this occurs, it is prudent that the authors explain their action to the editors of both journals and voluntarily withdraw from one of the journals.

In redundant publication, the manuscript reports data that have already been published and, hence, do not add anything new to the existing knowledge. Sometimes, what constitutes 'substantial overlap' may not be immediately clear and requires some judgment. There are many reasons why authors do this. Firstly, the authors may not be able to objectively assess the amount of data overlap of their papers. Secondly, the 'publish or perish' culture in many academic institutions has pressurised some academicians to publish more papers. To avoid this,, the authors should declare that data from the same study have been published when submitting the manuscript.Theyshould highlight how data from the newly submitted manuscript adds to what hasvalready been reported previously. Papers that have been previously published from the same studyPshould be referenced and sent to the editors to allow them to ascertain the degree of overlap.

It is important for authors to be familiar with good publication practice. There are two useful resources that authors can refer to for more information:
1. International Committee of Medical Journal Editors: http://www.icmje.org/
2. Committee on Publication Ethics: http://publicationethics.org/

If in doubt, it is always a good idea to write to the journal editor for clarification. The Malaysian Family Physician welcomes discussion and feedback on this issue.

EDITORIAL

Validating instruments of measure : Is it really necessary?

Lai PSM

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In this April issue of the Malaysian Family Physician, there are two manuscripts on the validation of instruments. The first manuscript is the validation of the Malay version of the Berlin Questionnaire to identify Malaysian patients at risk for obstructive sleep apnea,[1] whilst the second manuscript is on the validation of the Malay version of the Diabetes Quality of Life for Youth Questionnaire.[2]

All instruments assessing patient reported outcomes have to be evaluated for its reliability and validity in the country prior to its use. The purpose of this is to ensure that the instrument used is measuring what it is supposed to measure. This is applicable to instruments that have been developed in English by other authors, and validated elsewhere; as well as self-developed instruments or those that have been modified (e.g. translated into another language or otherwise).

Instruments that have been developed in English and validated elsewhere

Many Malaysian researchers are estatic when they discover that an instrument which they would like to use has been developed in English and validated in countries like the United States, United Kingdom or Australia. A common mistake is to assume that this questionnaire is also suitable for use in Malaysia. Although English is widely spoken and understood by many Malaysians, the English used overseas may not necessarily be interpreted the same way in Malaysia. This is often due to the cultural differences that exist between different populations in different countries. An example is the Quality of Life Questionnaire of the European Foundation for Osteoporosis (QUALEFFO-41), which was designed by the International Osteoporosis Foundation.

Researchers will need to seek permission for use from the original author(s). Sometimes, the original authors will state that changes to the original instrument are not allowed. This should be mentioned when validating the instrument, as it will then determine whether the instrument can subsequently be modified or not.

Sample size

The sample size required for validation studies is usually based on a rule of thumb, i.e. 5-10 participants should be recruited for every item of the instrument, in order to conduct confirmatory factor analysis.[(3)] The Berlin Questionnaire has 10 items. Although Yunus et al did not perform confirmatory factor analysis, they recruited 150 participants to validate their instrument. The Diabetes Quality of Life (DQOL) instrument however, has 60 items. The number of participants required should be 300-600. In this manuscript, the authors only recruited 82 participants, which is the minimum requirement for a validation study.

It is sometimes difficult to satisfy this "rule of thumb", especially in cases where the condition is uncommon (e.g. children with epilepsy with normal cognitive function). This will then need to be stated as a limitation of the study,

where confirmatory factor analysis will not be conducted.

Statistical analyses used in validation

The reliability of the instrument is the extent to which an instrument of measure yields the same result when used repeatedly. This involves the agreement of measuring instruments over time, where a test-retest is conducted. The duration of test-retest may vary from two to six weeks. Results are then compared and correlated with the initial test to give a measure of stability.[24] Spearman's rho or Pearson's correlation can be used to determine the relationship between each item of test-retest. Any correlation coefficient value which equals to ±0.4 was considered as a moderate association and therefore acceptable.[35]

Internal consistency is a measure of reliability of different survey items intended to measure the same characteristic. It is used to determine whether all items in a multi-item scale measures the same concept. Internal consistency is assessed using Cronbach's α coefficient, where a value of >0.7 is considered good.[46] The effect of removing a single item on the Cronbach's α should also be determined. Corrected item-total correlations can be used to identify items which did not agree well with other items in the questionnaire. Item-total correlations should >0.2 to be considered as acceptable.(57)

Dimensionality of an instrument can be analysed using maximum likelihood factor analysis.

Factor analysis that shows an eigen value>1 indicates that there are more than one component in the instrument.[13] Construct validity seeks agreement between a theoretical concept and a specific measuring device or procedure. This can be divided into two sub-categories: convergent validity and discriminant validity.[68]

Convergent validity is the actual general agreement among ratings, gathered independently of one another, where measures should be theoretically related.[79] In the validation of the Berlin Questionnaire by Yunus et al, the authors assessed obstructive sleep apnea by asking all participants to attend an overnight level I polysomnogram. Convergent validity was not performed by Jalaludin et al. in the validation of the Diabetes Quality of Life for Youth Questionnaire.

Discriminant validity is to determine the lack of a relationship among measures which theoretically should not be related.[68] E.g. the QOL should be better in participants without back pain versus those with back pain. Both the manuscripts published did not assess discriminant validity.

Self-developed instruments or instruments which have been modified (translated into another language or otherwise)

It is very common for Malaysian researchers to translate a previously validated instrument to Bahasa Malaysia as per the two manuscripts published in this month's issue. The translation process itself must be rigorous and should be performed according to guidelines and standards for the translation and cultural adaptation of patient-reported outcomes.[810] The final translated version will need to be pilot tested to evaluate the clarity of the translated document, whilst preserving the original content and meaning. Similarly, when developing new instruments, the face and content validity will need to be established as described above.

It is therefore very encouraging to see the two manuscripts on validation of instruments in this issue. This shows that Malaysian researchers are more aware of the importance of instrument validation. Future effort should focus on publishing more manuscripts of this nature and to create a network for researchers to collaborate in this area. We should also create an archive for all instruments that have

been validated in Malaysia so that it will be easily accessible to researchers measuring patient reported outcomes.

References

1. Yunus A, Seet W, Mohamad Adam B, Haniff J. Validation of the Malay version of Berlin questionaire to identify Malaysian patients for obstructive sleep apnea. Malaysian Family Physician 2013;8(1):03-9
2. Mohamad Adam B, Jalaludin MY, Fuziah MZ, Hadhrami MH, Janet YH Hong, Jamaiyah H. Reliability and validity of the Malay translated version of diabetes quality of life for youth questionaire. Malaysian Family Physician 2013;8(1):10-7
3. Gorsuch RL. Factor analysis. 2nd ed. Hillsdale, N.J: L. Erlbaum Associates; 1983.
4. Colorado State University. Stability reliability and internal consistency. 1993 [cited 2009 31 March]; Available from: http://writing.colostate.edu/guides/research/relval/com2a3.cfm.
5. Archambault S. Spearman rho. Psychology Department, Wellesley College; 2000 [updated 31 July 2000; cited 2009 17 May]; Available from: http://www.wellesley.edu/Psychology/Psych205/spearman.html.
6. Cronbach LJ. Coefficient alpha and the internal structure of tests. Psychometrika. 1951;16(3): 297-334.
7. Devellis RF. Scale Development. Sage Publications; 1991. p. 24-33.
8. Campell DT, Fiske DW. Convergent and discriminant validation by the multitrait-multimethod matrix Psychological Bulletin1959. p. 81-105.
9. Carmines EG, Zeller RA. Reliability and viability assessment. CA: Thousand Oaks; 1991.
10. Wild D, Grove A, Martin M, Eremenco S, McElroy S, Verjee-Lorenz A, et al. Principles of Good Practice for the Translation and Cultural Adaptation Process for Patient-Reported Outcomes (PRO) Measures: report of the ISPOR Task Force for Translation and Cultural Adaptation. Value Health. 2005;8(2):94-104.

ORIGINAL ARTICLE

Validation of the Malay version of Berlin questionaire to identify Malaysian patients for obstructive sleep apnea

Yunus A, Seet W, Mohamad Adam B, Haniff J

Yunus A, Seet W, Mohamad Adam B, Haniff J. Validation of the Malay version of Berlin questionaire to identify Malaysian patients for obstructive sleep apnea. Malaysian Family Physician 2013;8(1):05-11

Keywords
obstructive sleep apnoea, Berlin questionnaire,, reliability, validity, sensitivity, specificity.

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Abstract:

Objective: To validate the Malay version of Berlin Questionnaire (BQ) as a tool to screen for patients at risk of obstructive sleep apnea (OSA) in primary care
Background: Most patients with OSA are unrecognised and untreated. Thus, the BQ has been used as a tool to screen for patients at risk for OSA. However, this tool has not been validated in Malay version.
Materials and Methods: A parallel back-to-back translation method was applied to produce the Malay version (Berlin-M). The Malay version was administered to 150 patients in a tertiary respiratory medical centre. Concurrent validity of the Berlin-M was determined using the Apnea Hypopnea Index (AHI) as the gold standard measure. The test-retest reliability and internal consistency of the Berlin-M were determined.
Results: Most patients were males (64.0%) and majority of them were Malays (63.3%). Based on the sleep study test, 121 (84.0%) were classified as high risk while 23 (16.0%) as low risk using the Apnea Hypopnea Index (AHI) ≥5 as the cutoff point. The test–retest reliability Kappa value showed a good range between 0.864 – 1.000. The Cronbach's alpha of BQ was 0.750 in category 1 and 0.888 in category 2. The sensitivity and specificity were 92% and 17% respectively.
Conclusion: The BQ showed high sensitivity (92%) but low specificity (17%). Therefore, though the Berlin-M is useful as a screening tool, it is not a confirmatory diagnostic tool.

Introduction

Obstructive sleep apnea (OSA) is still an under-diagnosed and under-treated medical problem.[1] Sleep disturbances are common in the United States of America (USA) and the American Academy of Sleep Medicine reported that 46% of the population suffered from mild sleep apnoea, 34% had frequent snoring, 30% had insomnia and 25% struggled with excessive daytime sleepiness (EDS)[2] A cross sectional study of adults aged between 30-70 in Malaysia found that sleep disorders were pervasive. The prevalence of habitual snoring, sleep-disordered breathing and excessive daytime sleepiness were 47.3%, 15.2% and 14.8%, respectively. Seven percent of the respondents were suspected clinically of having OSA.[3]

Other co-morbidities associated with OSA which can lead to increased mortality include hypertension, increased risk of cardiovascular disease and pulmonary hypertension. Hence, it is essential that OSA is diagnosed early and

treated to improve patients' quality of life. A Canadian study found that people with OSA are at double the risk of being in a car crash.[4] However, approximately 80% of people suffering from moderate to severe OSA have not been clinically diagnosed.[5]

The gold standard for diagnosing OSA is the attended overnight level I polysomnogram (PSG). It requires the patient to be admitted overnight at a medical facility which has a sleep study centre. Polysomnography is used to measure the apnoea-hypopnoea index (AHI) and other parameters; the severity of OSA is measured with the AHI, which is the number of apnea and hypopnea events per hour of sleep.[6] The American Academy of Sleep classifies OSA as follows: presence of OSA (AHI ≥ 5), mild OSA (AHI of 5 to 15), moderate OSA (AHI of 16 to 30) and severe OSA (AHI > 30).[6] The sleep study services are limited and costly. Hence, there is a need for an instrument to screen for possible OSA.

A number of screening tools are available such as the BQ and Epworth Sleepiness Scale (ESS). The latter, a scale intended to measure average daytime sleepiness, is basically a self-rating form consisting of eight questions. The questions are designed to assess daytime sleepiness and scores range from 0-24, with scores higher than 16 indicating severe daytime sleepiness .[7] The BQ contains 10 questions covering three categories that identify risks of OSA and it was chosen as the study instrument.

The BQ is a validated instrument used to identify individuals at risk of OSA. It was developed based on the findings of the Conference on Sleep in Primary Care held in April 1996 in Berlin, Germany. It has been evaluated in the population of Cleveland, Ohio with a sensitivity of 86% and specificity of 77%. Literature was reviewed and factors or behaviours that persistently correlated to the presence of sleep-disordered breathing across all studies were included in the questionnaire. The final questionnaire only focused on a limited set of known risk factors for OSA .[8] Previous studies have successfully used the BQ to predict sleep-disordered breathing. The BQ contains 10 questions on three categories: severity of snoring, excessive daytime sleepiness and history of high blood pressure or obesity. The patient is instructed to answer all the questions, and the physician or medical staff analyses the responses. If the individual scores positive in at least two of the three categories, the patient is at high risk for OSA. However, if the patient scores positive in only one or none of the categories, then the patient is deemed to be at a low risk for OSA.[8]

Currently, there is no tool available in the Malay language to screen for OSA. Therefore, the objective of this study was to validate the Malay version of the BQ (Berlin-M) to identify population at risk for OSA in Malaysia.

Materials and Methods

The study process

This study was conducted in three phases. In phase 1, the BQ was translated from English to Malay. Phase 2 was the pre-testing of the pre-final version of the translated questionnaire and in phase 3, a validation study was carried out. This study spanned from June 2006 to December 2008.

Phase 1 (Translation process)

The translation process adhered to the guideline of cross-cultural adaptation by Beaton et al to ensure that the contents and meanings were preserved. [9] The aim was to evaluate the clarity, comprehensibility, and adequacy of wording to ensure that they can be understood by the Malaysian population.

Two forward translations were produced; one by a clinician involved in OSA clinic (and therefore not blinded to the study), and the other by a certified translator from the Malaysian National Institute of Translation (who was blinded to the study). They produced the M1 and M2 versions which were later

back translated to English (the E1 and E2, respectively) independently by a certified translator and a clinician. The researchers and the translators then formed the expert panel which reviewed all the different versions - the original, two forward and two backward translations.

The pre-final Malay version of the BQ was produced by comparing E1 and E2 with the original English version. This was done by choosing the Malay version, which produced the back-translation that was closest to the original English version. Thus, the best translations were merged to produce the final harmonised version.

Phase 2 (Pre-test)

Seven subjects took the pre test for the Berlin-M in the Institute of Respiratory Medicine (IRM). The subjects had passed a fluency and translation test and are considered bilingual.
Each subject was given five forms - the Patient Information sheet, assent and consent forms, demographic form and two versions of the Berlin OSA Questionnaire. The Malay and English versions were administered at random sequence followed by a focus group discussion on each item in the questionnaires. They were asked whether the words and terms used in the Malay version were clear, relevant and comprehensible. The subjects agreed that Berlin-M was straightforward and easy to understand.

Phase 3 (Validation)

The Berlin-M was later tested for its reliability and validity among 150 subjects in the same institute. 150 study subjects were enrolled. They were selected from the patients referred to IRM for overnight PSG using a convenience sampling. The subjects were asked to fill in the patient information sheet as well as a self-administered questionnaire which took them about 20-30 minutes to complete. The subjects answered the Berlin-M before the overnight PSG and during the follow up visit to the IRM.

Study design

This cross sectional study was conducted in a single centre and the study participants were patients diagnosed with OSA. Samples were selected consecutively from new cases referred to the institute according to the inclusion and exclusion criteria listed below.

Inclusion criteria:

All patients who satisfy these criteria

- ≥18 years old
- Malay language literate
- Suspected OSA, if at least one of the following symptoms appears:
  - > Excessive daytime sleepiness
  - > Loud snoring
  - > Unrefreshing sleep

Exclusion criteria:

- Patients with major systemic co-morbidity such as chronic obstructive pulmonary disease or cardiac failure
- Patients with respiratory infections

Ethical Approval

This study has received ethical approval from the Ministry of Health Malaysia (MRG-2004-17)

Statistical methods

The test-retest reliability was conducted among the same study population two weeks after the initial test and it was assessed using the Cohen's Kappa statistic. Weighted Kappa was used for questions with multiple-point answers. Internal consistency was assessed using the Cronbach's alpha coefficient. The sensitivity and specificity were calculated using AHI ≥ 5 as the cutoff point for high AHI and AHI < 5 as low or normal.

Study instrument

The patients completed a self-administered demographic data collection form which included age, sex, ethnicity, education and the Berlin-M questionnaire. Polysomnography (PSG) machine was used as basis of gold standard and to validate Berlin-M questionnaire.

Results

Profile

A total of 150 subjects were recruited but only 144 were included in the final analysis as six patients did not complete the overnight PSG. Most subjects were male (64.0%) and Malay (63.3%) with a mean (SD) age of 44.7 (11.5) years. The mean (SD) of neck circumference (cm), body mass index (kg/m2), hip circumference (cm), waist circumference (cm) and systolic blood pressure (cm) were 39.3 (4.9), 36.3 (11.2), 110.0 (19.2), 94,1 (16.9) and 129.4 (14.6), respectively. Majority of the patients were obese and had high blood pressure (Table 1).

Reliability

A high test-retest reliability was recorded in the range of 0.892 – 1.000 (Table 2). The Cronbach's alpha coefficients were calculated for each category; category 1 and 2 showed Cronbach's alpha of 0.750 and 0.207, respectively. Cronbach's alpha for category 2 was low because item 9 enquired how often patients nodded off or fallen asleep while driving but many of the participants did not drive. When item 9 was deleted, the Cronbach alpha coefficient for category 2 rose to 0.888 (Table 3).

Validity

The Berlin-M had a sensitivity of 92% and specificity of 17%. In view of the high sensitivity, the Berlin-M questionnaire can be considered as a screening tool for OSA (Table 4).

Table 1: Patient's characteristics and clinical profile

Variable (s)	n (%)	Mean (SD)	Min, max
Age (n=150)		44.7 (11.5)	23.0, 76.0
Sex (n=150)			
• Male	96 (64.0)	-	-
• Female	54 (36.0)	-	-
Ethnicity (n=XX)			
• Malay	95 (63.3)	-	-
• Chinese	30 (20.0)	-	-
• Indian	24 (16.0)	-	-
Neck circumference (n=148)	-	39.3 (4.9)	22.0, 52.0
Body mass index (kg/m2)	36.3 (11.2)	19.7, 81.7	(n=149)
Hip circumference(cm)	110.0 (19.2)	75.0, 185.0	(n=147)
Waist circumference (cm)	94.1 (16.9)	65.0, 150.0	(n=148)
Blood pressure (mmHg)	(n=144)		
• Systolic		129.4 (14.6)	98.0, 191.0
• Diastolic		82.2 (9.9)	55.0, 109.0
AHI reading (n=144)		38.8 (31.9)	0.0, 113.0
AHI two categories (n=144)			
• Low/Normal (<5)	23 (16.0)		
• High (>5)	121 (84.0)		

Table 2: Test – retest reliability of Berlin-M Questionnaire

Item no.	Kappa
1	1.000
2	1.000
3	0.949
4	0.919
5	0.877
6	0.864
7	0.890
8	1.000
9	0.892
10	0.930

Table 3: Reliability of Berlin-MQuestionnaire

Category	Item (Likert scale only)	Cronbach's alpha
1	No. 2, 3 and 5	0.750
2	No. 6, 7 and 9	0.207
	No. 6 and 7	0.888*

**Note: Item 9 was excluded because more than half of the patients did not drive.*

Table 4: Sensitivity, specificity, positive and negative predictive values of Berlin-M Questionnaire using AHI categories

Sensitivity	0.92
Specificity	0.17
Positive predictive value	0.97
Negative predictive value	0.29

Discussion

Our findings show that Berlin-M is a reliable and valid screening tool for OSA. However, its low specificity renders it unsuitable as a confirmatory tool to diagnose OSA. Overnight PSG is the recommended "gold standard" for the diagnosis of OSA. However, it requires patients to stay overnight in a hospital which has a sleep study facility. As a result of overwhelming demand and limited resources, there is significant delay in the diagnosis and treatment of patients with OSA. This increases the mortality and morbidity as a study has shown that incidences of non-fatal and fatal cardiovascular events escalate in untreated severe OSA.[10] A screening tool is useful in stratifying patients who have a high suspicion of OSA so that they can undergo proper diagnostic test and treatment. our study found promising results from Berlin-M as a validated instrument in Malay language to screen patients for OSA in Malaysia

The Berlin-M showed good sensitivity (92%) with low specificity (17%) when the cut off was AHI ≥ 5. A study in Portugal reported a sensitivity of 72% but a higher specificity (80%).[11] A study using the Arabic version of the BQ showed a sensitivity of 97% and specificity of 90% which validates the fact that a translated BQ can be a reliable screening tool.[12] A study conducted in India using a Hindi version of the BQ also showed high sensitivity (86%) and specificity (95%).[13] The Berlin-M, however, had a high sensitivity but low specificity.

The results also showed that a majority of the patients were obese and had high blood pressure. They were consistent with a study conducted in Brazil and USA which reported that hypertensive and obese subjects had a higher chance of being diagnosed with OSA.[14] A Turkish study found that body fat composition and BMI are significant predictors for OSA.[15]

The Berlin-M showed high test-retest reliability for all categories with values higher than 0.8, which affirmed the quality of the translation. This study found that a good translation of BQ can achieve a high test-retest reliability as attested by an earlier

study in Malaysia.[16] Thus, the Berlin-M was well translated cross-culturally and the participants understood the content and were able to answer all the questions.

Limitations

The study involved the sleep-study clinic population from only one centre. The findings, therefore, do not represent the general population. However, if the study were to be conducted in outpatient clinics, for example those with access to the general population, it can provide a better overall picture of the utility and validity of the Berlin-M. This study also excluded patients who were diagnosed with depression and hypothyroidism, who can present with symptoms similar to OSA. This may complicate the treatment and diagnosis of OSA.[17, 18]

Conclusion

The Berlin-M has a high sensitivity (92%) but low specificity (17%). This suggests that it may be used to screen for OSA symptoms but is poor in confirming whether a person has clinical OSA. It also has a good positive predictive value though the negative predictive value is poor. i.e. if it is tested positive, it is more likely that OSA is present; whereas if it is tested negative, it cannot rule out the absence of OSA. Therefore, Berlin-M cannot be used to confirm the diagnosis of OSA but can still serve as a useful screening tool for patients who may have OSA. For example, Berlin-M can be used to screen patients in primary care needing referral to the tertiary centre to confirm the diagnosis and for further management. Moreover, the Ministry of Health is planning to partner with the Transport Ministry to screen bus drivers for sleep disorders in order to diagnose and treat OSA. The Berlin-M can be considered as a screening tool for OSA among the drivers.[19]

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References

1. Gibson GJ. Obstructive sleep apnoea syndrome: underestimated and undertreated. *Br Med Bull*. 2004;72:49-65.
2. Baldwin CM, Ervin AM, Mays MZ, et al. Sleep disturbances, quality of life, and ethnicity: the Sleep Heart Health Study. *J Clin Sleep Med*. 2010;6(2):176-13.
3. Kamil MA, Teng CL, Hassan SA. Snoring and breathing pauses during sleep in the Malaysian population. *Respirology*. 2007;12(3):375-80.
4. Mulgrew AT, Nasvadi G, Butt A, et al. Risk and severity of motor vehicle crashes in patients with obstructive sleep apnoea/hypopnoea. *Thorax*. 2008;63(6):536-41.
5. Young T, Evans L, Finn L, Palta M. Estimation of the clinically diagnosed proportion of sleep apnea syndrome in middle-aged men and women. *Sleep*. 1997;20(9):705-06.
6. Lam JC, Sharma SK, Lam B. Obstructive sleep apnoea: definitions, epidemiology & natural history. *Indian J Med Res*. 2010;131:165-70.
7. Johns MW. A new method for measuring daytime sleepiness: the Epworth sleepiness scale. *Sleep*. 1991;14(6):540-45.
8. Netzer NC, Stoohs RA, Netzer CM, Clark K, Strohl KP. Using the Berlin Questionnaire to identify patients at risk for the sleep apnea syndrome. *Ann Intern Med*. 1999;131(7):485-91.
9. Beaton DE, Bombardier C, Guillemin F, Ferraz MB. Guidelines for the process of cross-cultural adaptation of self-report

measures. *Spine* (Phila Pa 1976). 2000;25(24):3186-91.

10. Marin JM, Carrizo SJ, Vicente E, Agusti AG. Long-term cardiovascular outcomes in men with obstructive sleep apnoea-hypopnoea with or without treatment with continuous positive airway pressure: an observational study. *Lancet*. 2005;365(9464):1046-53.

11. Vaz AP, Drummond M, Mota PC, Severo M, Almeida J, Winck JC. Translation of Berlin Questionnaire to Portuguese language and its application in OSA identification in a sleep disordered breathing clinic. *Rev Port Pneumol*. 2011;17(2):59-65.

12. Saleh AB, Ahmad MA, Awadalla NJ. Development of Arabic version of Berlin questionnaire to identify obstructive sleep apnea at risk patients. *Ann Thorac Med*. 2011;6(4):212-16.

13. Sharma SK, Vasudev C, Sinha S, Banga A, Pandey RM, Handa KK. Validation of the modified Berlin questionnaire to identify patients at risk for the obstructive sleep apnoea syndrome. *Indian J Med Res*. 2006;124(3):281-90.

14. Jesus EV, Dias-Filho EB, Mota Bde M, et al. Suspicion of obstructive sleep apnea by Berlin Questionnaire predicts events in patients with acute coronary syndrome. *Arq Bras Cardiol*. 2010;95(3):313-20.

15. Ogretmenoglu O, Suslu AE, Yucel OT, Onerci TM, Sahin A. Body fat composition: a predictive factor for obstructive sleep apnea. *Laryngoscope*. 2005;115(8):1493-98.

16. Hasniah AL, Jamalludin AR, Norrashidah AW, et al. Cross-cultural adaptation and reliability of pediatric sleep questionnaire in assessment of sleep-disordered breathing in the Malay speaking population. *World J Pediatr*. 2012;8(1):38-42.

17. Ejaz SM, Khawaja IS, Bhatia S, Hurwitz TD. Obstructive sleep apnea and depression: a review. *Innov Clin Neurosci*. 2011;8(8):17-25.

18. Kapur VK, Koepsell TD, deMaine J, Hert R, Sandblom RE, Psaty BM. Association of hypothyroidism and obstructive sleep apnea. *Am J Respir Crit Care Med*. 1998;158(5 Pt 1):1379-83.

19. Au E. Weeding out sleepy bus drivers. *New Straits Times*. 2012.

ORIGINAL ARTICLE

Reliability and validity of the Malay translated version of diabetes quality of life for youth questionnaire

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Abstract

Introduction: Many studies reported poorer quality of life (QoL) in youth with diabetes compared to healthy peers. One of the tools used is the Diabetes Quality of Life for Youth (DQoLY) questionnaire in English. A validated instrument in Malay is needed to assess the perception of QoL among youth with diabetes in Malaysia.
Objective: To translate the modified version, i.e., the DQoLY questionnaire,into Malay and determine its reliability and validity.
Methods: Translation and back-translation were used. An expert panel reviewed the translated version for conceptual and content equivalence. The final version was then administered to youths with type 1 diabetes mellitus from the universities and Ministry of Health hospitals between August 2006 and September 2007. Reliability was analysed using Cronbach's alpha, while validity was confirmed using concurrent validity (HbA1c and self-rated health score).
Results: A total of 82 youths with type 1 diabetes (38 males) aged 10-18 years were enrolled from eight hospitals. The reliability of overall questionnaire was 0.917, and the reliabilities of the three domains ranged from 0.832 to 0.867. HbA1c was positively correlated with worry (p=0.03). The self-rated health score was found to have significant negative correlation with the "satisfaction" (p=0.013) and "impact" (p=0.007) domains.
Conclusion: The Malay translated version of DQoLY questionnaire was reliable and valid to be used among youths with type 2 diabetes in Malaysia.

Introduction

Diabetes mellitus is a chronic disease without a cure. In patients with type 1 diabetes mellitus (DM), there is lack of endogenous insulin production. Hence, these patients need to be given insulin through injections 2-4 times per day. They need to perform regular blood glucose monitoring and follow a strict diet to maintain good glycaemic control and avoid long-term complications. These lifestyle modifications may affect the quality of life (QoL) of patients. Therefore, the QoL questionnaire is an important tool to measure patients' perception of their health status and one of the tools used is the Diabetes Quality of Life (DQoL) questionnaire in English. As Malaysia is a multi-ethnic society with Bahasa Melayu (Malay) being the national language, it is important to have a validated tool in Malaysian language to measure the QoL of youth with type 1 DM.

It is ideal to develop a culture-sensitive QoL instrument. However, resources and time involved often make this difficult. Researchers often use the practical option of choosing a tool developed in another language and translating it into the target language. However, the translation process is challenging as concepts developed for use in one culture and language often contain semantic, idiomatic, and cultural differences. A simple word-for-word translation of the DQoL for Youth questionnaire (DQoLY) from English to Malay may produce a questionnaire that has no real meaning to Malay speakers.

The DQOL was developed in the early 1980s for use in the Diabetes Control and Complication Trial (DCCT) which intended to evaluate the satisfaction, impact, and worries associated with the treatment of DM. This questionnaire contains 60-items and can be use for both type 1 and type 2 DM.- The DQoL consists of four inter-correlated subscales: (1) satisfaction to treatment, (2) impact of treatment, (3) worry about the future effects of diabetes, and (4) worry about social/vocational issues (worry can also be combined into a single subscale) and one last item on general well-being (Table 1). This single item was derived from national surveys of quality of well-being and can be used to compare subjects with a wide variety of patients. Hence, the DQoL have both diabetes-specific and generic QoL items. Ingersoll et al. modified the scales to develop an instrument that is suitable for youths. Table 1 describes the modification process.

Items in the DQoL are scored using a 5-point Likert scale. There are two formats: one on frequency of negative impact of diabetes or its treatment (i.e., with 1 being never and 5 being all the time); the second is about satisfaction (i.e., with the response of 1 being very satisfied and 5 being very dissatisfied). Regardless of formats, higher scores indicate poorer QoL.

DQoL has excellent internal consistency (r = 0.8–0.9), high test-retest reliability for both adolescents and adults with r ranged between 0.8 and 0.9. It was also found to have good convergent validity for all four subscales in both type 1 and type 2 DM. The level of correlations was between 0.3 and 0.7, indicating that the DQoL is related but not identical to psychological well-being, affective balance, and adjustment to illness.[3]

The purpose of this study was to translate the original DQoL into Malay and to ensure that the translation was as meaningful and understandable as possible for the Malay-speaking youths. It also aimed to determine the reliability and validity of this tool.

Methodology

The study process

This study was performed in three phases: Phase 1 was the translation from the original English questionnaire to the Malay version; Phase 2 involved pre-testing of the pre-final Malay version; and Phase 3 was the validation study.

Phase 1 (Translation process of DQoLY)

Permission to use and translate the DQoLY for this study was obtained from the author who also gave permission to the modification of the DQoL to suit the local culture as well as the target age that we intend to apply in our population. The translation process was carried out according to the EuroQoL translation guidelines.[6] The aim was to evaluate clarity, understandability, naturalness, and adequacy of wording while preserving the content and the meaning.

Two forward translations, one by a clinician who had direct involvement in diabetes care in youth and therefore not blinded to the study aim, whereas the second translator was a certified traslator from the Malaysian National Institute of Translation (Institut Terjemahan Negara Malaysia) who was blinded to the study aim. Each produced the M1 and M2

versions, which were later back translated into English independently by another certified translator and another clinician.

An expert panel, comprising researchers and translators, then reviewed all the different versions to produce the pre-final DQoLY Malay version. This was done by comparing E1 and E2 with the original English version. The Malay version that produced a back-translation that was closest to the original English version was chosen. Thus, the reconciled version of M1 and M2 became the pre-final Malay version.

Phase 2 (Pre-test)

The main objective of the pre-test was to get response from children whether they could understand the questions and it formed part of face validity. A pre-test for the DQoLY was conducted between May and October 2006 at three sites: paediatrics clinics in Seremban Hospital and Universiti Kebangsaan Malaysia Hospital,, and physician clinic in Kuala Lumpur Hospital. Pre-test was conducted with 15 adolescents aged 10-18 years who had DM. The subjects underwent a fluency test by reading and translating a short Malay passage from the local newspaper into English. It was assumed that they were bilingual if they passed the test.

During the pre-test, each subject was given five forms: the patient information sheet, assent and consent forms, demographic form, and two versions of the DQoLY. Malay and English versions were given at random sequence to the subjects in a classroom examination style environment. This session was followed by a group random probe discussion on each item of the questionnaires. They were asked four questions: (1) explain what they understood from the question, (2) state whether the question made 'sense', (3) state whether they thought the Malay question was worded correctly, and (4) provide any alternative word that would explain the question better. This was to ensure word suitability and comprehension.

Overall, the patients agreed that the Malay version of the DQoLY was clear, straightforward, and easy to understand. Random probe revealed that for the 'satisfaction' domain i.e. item 11 ('appearance' vs 'rupa bentuk') and 13 ('leisure time' vs 'masa lapang'), the participants felt that the translation was different from the original meaning. The expert panel decided to maintain the original translation which was felt to be correct and the two forward translations were in agreement. Hence, no changes were made.

For the 'impact' domain, in item 7, the participants, preferred the term "kawan" to "sahabat" (both are synonymous with the meaning 'friend'). However, as the actual word in the context of the whole sentence was a noun ('friendship'), 'persahabatan' was used because 'perkawanan' does not exist in Malay. For the 'worries' domain, all items were easily understood and maintained.

Phase 3 (Validation)

This multicentre, cross-sectional study involved eight centres conveniently chosen from Ministry of Health (MOH) and university hospitals in peninsular Malaysia. DQoLY were administered to 82 paediatric patients with type 1 DM.

The final Malay version of the DQoLY was later tested for its reliability and validity. This phase of the study was conducted in nine paediatric clinics around the country, namely, the Pediatrics Institute of the Kuala Lumpur Hospital and various paediatric and medical clinics of the Universiti Malaya Medical Centre, Putrajaya Hospital, Raja Permaisuri Bainun Hospital, Ipoh, Sultanah Nur Zahirah Hospital, Kuala Terengganu, Melaka Hospital, Sultanah Aminah Hospital, Johor Bharu, Sultanah Bahiyah Hospital, Alor Setar and Universiti Sains Malaysia Hospital, Kota Bharu.

Participants and their parents were given patient information sheets prior to the

answering the questionnaire. Both participants and their parent(s) gave their assent and written consent. The questionnaire took up to 20-30 minutes to complete.

Study design

This was a multicentre, cross-sectional study. The study population consisted of children and adolescents with diabetes who were seen in the Ministry of Health and the university hospitals' clinics. Consecutive cases newly referred to the paediatric and medical clinics in the nine study sites were recruited based on the inclusion and exclusion criteria. The inclusion criteria included children and adolescents: (1) aged 10 to 19 years, (2) who can read and write Malay, and (3) who were diagnosed with DM, irrespective of the duration and type of treatment received. There was only one exclusion criterion, that is, patients with cognitive impairment (such as mental retardation) and severe psychosis.

Study instruments

The subjects were given two questionnaires: (1) demographic questionnaire (age, gender, ethnicity, education, etc.), which was designed by the researchers and (2) the final Malay version of the DQoLY. The attending doctor also documented the type of diabetes and latest HbA1c level during the study visit.

Ethical consideration

Ethics approval was granted for all the sites: the Malaysian Research & Ethics Committee, Ministry of Health; Medical Ethics Committee, University of Malaya Medical Centre; and the Ethics Board of the University of Science Malaysia.

Analysis and statistical methods

Face and content validity were performed to validate the translation of the instrument. Face validity was checked based on respondent review, while content validity was checked by expert review. Cronbach's alpha statistics was produced to check the internal consistency of all items and items under each domain (Table 3). Spearman rank test was to evaluate the correlation between general individual item with total DQoLY and HbA1c towards the three domains (Table 4). Independent sample t-test was used to determine whether DQoLY domains ('satisfaction', 'impact' and 'worry') could detect significant difference between individual self-rated scores (in two categories). This to support the discriminative validity where the DQoLY domains scores would discriminate between poor and good QoL of an individual. (Table 5). Statistical analysis was performed using SPSS version 19.0. (IBM Corp. Released 2010. IBM SPSS Statistics for Windows, Version 19.0. Armonk, NY: IBM Corp.)

Result

There were 82 patients who were eligible and participated in the study. Cognitive impairment was the main reason for exclusion. The mean (SD) age was 14.0 (2.7) years and the mean (SD) duration of DM was 6.9 (4.7) years (Table 2). Internal consistency was high for the three domains and ranged from 0.832 to 0.867 (Table 3). HbA1c was positively correlated with worry (p=0.03), that is, patients who were more worried about their disease had higher HbA1c. Self-rated health score (an item in the DQoLY where higher score indicates better health) was found to have significant negative correlation with "satisfaction" (p=0.013) and "impact" (p=0.007) (where higher score indicates poorer QoL) (Table 4). The scores of each DQoLY domain were higher and significant except for "worry" in those who rated themselves as having poor health (Table 5). The correlation coefficient of DQoLY domains was 0.476 (satisfaction and impact), 0.278 (satisfaction and worry), and 0.501 (worry and impact). All correlations were statistically significant with a p value <0.05.

Table 1: A comparison of the original and modified DQoL

Subscale/items	Original (DCCT, 1988)	Modified (Youth) Ingersoll (1991)	Modified (Youth) Yazid et al. (2013)
Satisfaction with treatment	18 items (15 core, 3 adolescents oriented)	Dropped one item, i.e., Item 10 (sexual life) Remainder 17 items	Remain as Ingersoll
Impact of treatment	27 items (20 core, 7 adolescents oriented)	Dropped 4 items 1) item 3 (hypoglycemia) 2) item 10 (sexual) 3) item 16 (tell others of your diabetes) 4) item 25 (being teased by siblings) Remainder 23 items	Dropped 5 items Youth version: 11 items 1) item 4 (insurance) 2) item 6 (going to work) and 3) item 7 (going for vacation) Malay version: drop 2 more 4) Item 1 (get married) 5) Item 2 (have children) Remainder 9
Worry about the future effects of diabetes and worry about social/ vocational issues	14 items (11 core, 3 adolescents oriented)	Dropped 3 items Youth version: 11 items 1) item 4 (insurance) 2) item 6 (going to work) and 3) item 7 (going for vacation) Remainder 11 items	Dropped 5 items Youth version: 11 items 1) item 4 (insurance) 2) item 6 (going to work) and 3) item 7 (going for vacation) Malay version: drop 2 more 4) Item 1 (get married) 5) Item 2 (have children) Remainder 9
General self rating of overall health	1 item	1 item.	Remain as Ingersoll
Total	60 items (including general self-rating item)	52 items (including general self-rating item)	50 items (including general self-rating item)

Table 2: Profile characteristics of patients

	n (%)
Age (years)	14.0 (2.7)*
Duration of diabetes (years)	6.9 (4.7)*
Gender	
Male	52 (46.0)
Female	61 (54.0)
Ethnicity	
Malay	60 (53.1)
Chinese	30 (26.5)
Indian	19 (6.8)
Others	4 (3.5)

**Reported in mean (SD).*

Table 3: Internal consistency measured by Cronbach's alpha of DQoLY (Malay version) domains

	Cronbach's alpha
Satisfaction	0.867
Impact	0.833
Worry	0.832
All	0.917

Table 4: Correlation between DQoLY (Malay version) domains and HbA1C and general individual item

	HbA1c r (P value)	Self-rated score r (P value)
Satisfaction	–0.07 (0.589)	–0.284 (0.013)
Impact	0.05 (0.725)	–0.307 (0.007)
Worry	0.28 (0.030)	–0.157 (0.177)

Test was done using the Spearman rank test.

Table 5: Discriminative validity of DQoLY (Malay version) items and domains with self-rated score

	Revised self-rated score Poor (n = 38) Mean (SD)	Good (n = 38) Mean (SD)	t statistics	df	P value
Satisfaction	41.4 (10.3)	36.2 (10.1)	2.222	74	0.029
Impact	53.8 (9.4)	47.4 (9.5)	2.942	74	0.004
Worry*	17.2 (5.8)	15.0 (5.2)	1.699	73	0.094

Poor = Fair and poor.
Good = Excellent and good.
**n for worry in poor category is 37due to missing.*

Discussion

Besides its original version in English, DQoL had been translated and used in other languages such as Taiwanese, Portuguese, and Turkish.[7-9], The translation was made and applied to adults. This validation study emphasizes on DQoL among youth with DM. DQoLY in Malay version was found to have high reliability and acceptable validity. The internal consistency of the DQoLY was high with the Cronbach's of more than 0.8 for the three domains and 0.917 for all items. The validity of the DQoLY was supported by the following analyses: (1) the correlation between the self-rated score (overall satisfaction towards life) and the three DQoLY domains; (2) the discriminative validity of the self-rated score (in two categories) towards the three domains; and (3) the correlation between HbA1c and the three DQoLY domains.

Based on the correlation of the self-rated score with the three domains, results showed that negative correlation exist where patients with higher self-rated scores (an item in the DQoLY where higher score indicates better health) had better satisfaction with life, and patients with diabetes which had better health had lower negative diabetes impact (where higher score in DQoLY domains indicates poorer QoL). Although we found that there was a negative correlation between the QoL and the 'worry' domain (–0.157), it did not reach statistical significance. This result was supported by discriminative validity shown in Table 5. The results showed that the status of health (poor and good) had discriminated the scores of satisfaction and impact but not for worry. These scores supported that the DQoLY domains differentiate poor and good quality of life of an individual. In addition, if based on HbA1c, we found that patients with higher HbA1c tend to get more worried; however, we failed to prove HbA1c has a correlation with satisfaction and impact.

In addition, strong correlations within the three domains indicate that the convergent validity is strong. This indicates that the three domains have strong correlation among each other and become as basis of convergent validity.

The failure of the DQOLY (Malay version) to correlate with HbA1c levels but correlate with self-perceived health status (life satisfaction) highlights the importance of clinical intervention and education of adolescents with diabetes. Practitioners have a tendency to equate good metabolic control with QoL. While the value of good metabolic control should not be underestimated, the findings from this study suggest that self-perceived QoL holds a very different meaning to adolescents with type 1 DM.

The elements of diabetes regimen that are most often associated with low adherence are those that have the most impact on the individual lifestyle.[10] Psychosocial QoL may constitute a different but important outcome compared to physical QoL, as reflected in good metabolic control. Issues related to the personal meaning of diabetes and its management are particularly salient when dealing with adolescents. Adolescence is a period of personal development, when the individual merge several disparate elements of a sense of self into a new identity. This new identity includes a restructured body image, new cognitive abilities, a revised value system, new peer and intimate relationships and establishment of a sense of adult independence.

When the development tasks of normal adolescent transition are coupled with the task demands for adherence to a diabetes regimen, adolescents may face tasks that are in conflict with one another. When the demands for adhering to diabetes regimens are in conflict with the more salient normal developmental demands of adolescence, the individual may decide not to comply with such a regimen.[11] Recently diagnosed adolescent patients are more likely to perceive their diabetes as having a negative impact on their life. Perhaps those who have had longer duration of diabetes have acquired effective coping strategies.[6]

We proposed few suggestions based on these results. First, DQoLY in Malay version can be used for Malaysian youth with diabetes. Second, self-rated score can be a faster approach to evaluate the satisfaction and impact of diabetes among youths. However, one of the weaknesses using self-reported questionnaire is that the evaluation can be subjective and it depends on the patients' interpretation of the questions. Finally, their worry with regards to diabetes can be an indicator that this group of adolescents might have higher HbA1c level. The limitation of this study is that the sample size was relatively small and not sufficient for authors to pursue with construct validity using exploratory factor analysis. Recent guideline for minimum sample size to conduct factor analysis is at least four sample/subject for one question/item.[12] In other words, DQoLY needs minimum 196 sample/subject. This is subject to the instrument must have strong reliability for each domain. If not, the general guideline is five to ten sample/subject for one question/item.[13]

Conclusion

DQoLY in Malay version has high reliability with acceptable validity. It can be used to measure the QoL among youths with DM in Malaysia.

References

1. Jacobson AM, the DCCT Research group: The Diabetes Quality of Life Measures. In: Bradley C, ed. Handbook of Psychology and Diabetes: A Guide to Psychological Measurement in Diabetes Research and Practice. Chur, Switzerland. Harwood Academic Publishers; 1994, p. 65-88.
2. Jacobson AM, Samson, JA, De Groot M: The evaluation of two measures of quality of life in patients with Type 1 and Type 2 diabetes. Diabetes Care 1994;17:267-74.
3. The DCCT Research Group. Reliability and validity of diabetes quality of life measure for the Diabetes Control and Complication Trial (DCCT). Diabetes Care 1998;11:725-32.
4. Howie LJ, Drury TF. Current estimates from the Health Interview Survey: United States—1977. Vital Health Stat 10. 1978;126:1-98.
5. Ingersoll GM, Orr DP. Behavioural and emotional risk in early adolescents. J Early Adolescence 1989;9:396-408.
6. EuroQol Group 2003. Translation guidelines (online). Available at: www.euroqol.org/web/files/Translation_guidelines.pdf. 8 September 2005.
7. Huang IC, Liu JH, Wu AW, et al. Evaluating the reliability, validity and minimally important difference of the Taiwanese version of the diabetes quality of life (DQOL) measurement. Health Qual Life Outcomes 2008;28(6):87.
8. Correr CJ, Pontarolo R, Melchiors AC, et al. Translation to portuguese and validation of the Diabetes Quality Of Life Measure (DQOL-Brazil). Arq Bras Endocrinol Metabol 2008;52(3):515-22.
9. Yildirim A, Akinci F, Gozu H, et al. Translation, cultural adaptation, cross-validation of the Turkish diabetes quality-of-life (DQOL) measure. Qual Life Res 2007;16(5):873-9.
10. Kuttz SMS. Adherence to diabetes regimens: Empirical status and clinical applications. Diabetes Educ 1990;16(1):50-9.
11. Anderson B, Laffel L. Behavioral and psychosocial research with school-aged children with type 1 diabetes. Diabetes Spectrum 1997;10: 277-81
12. Bujang Mohamad Adam, Ghani Puzziawati Ab, Soelar Shahrul Aiman, Zulkifli Nor Aizura. Sample size guideline for exploratory factor analysis when using small sample: Taking into considerations of different measurement scales, Statistics in Science, Business, and Engineering (ICSSBE), 2012. doi: 10.1109/ICSSBE.2012.6396605
13. Gorsuch, R. L. (1983) Factor analysis, 2ND EDN. Hillsdale, NJ: Erlbaum.

CASE REPORT

Generalised pruritus as a presentation of Grave's disease

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Tan CE, Loh KY. Generalised pruritus as a presentation of Grave's disease. Malaysian Family Physician 2013;8(1):20-3

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Abstract

Pruritus is a lesser known symptom of hyperthyroidism, particularly in autoimmune thyroid disorders. This is a case report of a 27-year-old woman who presented with generalised pruritus at a primary care clinic. Incidental findings of tachycardia and a goiter led to the investigations of her thyroid status. The thyroid function test revealed elevated serum free T4 and suppressed thyroid stimulating hormone levels. The anti-thyroid antibodies were positive. She was diagnosed with Graves' disease and treated with carbimazole until her symptoms subsided. Graves' disease should be considered as an underlying cause for patients presenting with pruritus. A thorough history and complete physical examination are crucial in making an accurate diagnosis. Underlying causes must be determined before treating the symptoms.

Background

Pruritus is a common presenting complaint in the primary care setting. Besides dermatological conditions, systemic diseases are known to cause pruritus. In one study, systemic diseases were the main cause of chronic pruritus in 13.3% of the cases.[1] Metabolic disorders, haematological diseases, malignancies and drugs were the main culprits.[1] However, pruritus is an uncommon presentation of hyperthyroidism. In Malaysia, only 6.9% of hyperthyroid patients are diagnosed with pruritus.[2] This case illustrates the importance of proper diagnosis in establishing the diagnosis of Grave's disease.

Case presentation

A 27-year-old woman presented to a primary care clinic with generalised itch lasting three days. There was no skin rash. She was constantly scratching which affected her sleep. There were no precipitating factors such as food or fabric allergies, though she complained that warm weather worsened the itch.

She had a similar episode one and a half years ago where the itch lasted for one year despite being treated with antihistamines and alternative therapies. The itch disappeared completely when she conceived.

She had a history of allergic rhinitis but no bronchial asthma or eczema. There was no history of food allergies or medication intolerances. There was no significant past medical history.

On examination, she did not look jaundiced or pale. Her blood pressure was 140/70 mmHg; her pulse rate was 120 beats per minute with regular rhythm. Apart from superficial scratch marks on her limbs and trunk, there were neither skin eruptions, burrows, vesicles nor scaly lesions to suggest scabies or fungal infection. Her nails, hair and scalp appeared normal.

On examination of her hands, there was fine tremor but the temperature was normal. On examination of her eyes, she was found to have mild exophthalmos but there was no lid lag on ophthalmoplegia. Upon removing her headscarf, there was a diffuse goitre, measuring 2 x 4 cm, which was soft and non-tender. There was no bruit detected over the goitre. Her reflexes were normal. Cardio-respiratory examination was normal.

The clinical findings prompted further investigation focusing on symptoms of thyroid disorders. She did not experience any palpitations, increased appetite, weight loss or menstrual cycle disturbances. She did not have a family history of goitre or thyroid disorders. She was given oral loratadine 10mg daily as well as chlorpheniramine 4mg at night pending further investigation. She returned two weeks later with no improvement of symptoms despite the antihistamines.

Investigations confirmed an elevated free T4 level (see Table 1) and her anti-thyroid globulin and anti-thyroid peroxidase levels were high. However, anti-TSH receptor antibody level was not tested. The patient's renal profile and liver functions were normal and her ECG showed no atrial fibrillation. She was administered carbimazole 30mg orally as well as propranolol 40mg twice daily. She was also cautioned of the adverse effects of carbimazole such as Stevens-Johnson Syndrome, agranulocytosis and skin rash.

Two months later, the patient reported a decrease in tremors and her itch had subsided completely. She gained 3kg of weight and her free T4 level dropped from 77.22 pmol/L to 36.2 pmol/L. Another two months later, her free T4 level dropped to 19.57 pmol/L and the carbimazole dosage was reduced to 20mg daily. The patient was also referred to the endocrine clinic for definitive treatment of Graves' disease as she was keen on radioactive iodine therapy. Pruritus did not recur following her treatment of hyperthyroidism.

Table 1. Blood investigation results

Test	Results	Normal range
Thyroid stimulating hormone (TSH)	0.01 mIU/mL	0.32 - 5.00 mIU/mL
Free thyroxine (fT4)	77.22 pmol/L	9.1 – 23.8 pmol/L
Anti-thyroid globulin	2736 IU/mL	0.0 – 40.0 IU/mL
Anti-thyroid peroxidise	>1000 IU/mL	0.0 – 35.0 IU/mL
Anti-nuclear antibody	Negative	-
Rheumatoid factor	Negative	-
Alanine transaminase (ALT)	107 mmol/L	< 44 mmol/L

Discussion

Graves' disease is an autoimmune thyroid disorder which accounts for 60 to 80% of cases presenting with hyperthyroidism.[3] It is eight times more common in women, with the incidence rate of 0.5 per 1000 women.[3] In Grave's disease, thyroid-stimulating antibodies stimulate thyrotropin receptors, resulting in an increased production of thyroid hormone. The distinguishing features of Graves' disease are the presence of ophthalmopathy and dermopathy (pretibial myxoedema).

Pruritus is an uncommon but recognised feature of autoimmune thyroid disorders. Although this condition had been noted since 1935, there are very few cases reported in the literature.[4] In a Malaysian study of 236 patients with hyperthyroidism, up to 6.4% of

patients with hyperthyroidism had symptoms of pruritus.[2] In two of the cases, the patients presented with pruritus alone which resulted in a delay in making the diagnosis of Graves' disease.[2]

The pathophysiology of generalised pruritus in autoimmune thyroid disorders is still unclear. Neither the levels of free T4 nor auto-antibody correlate well with the presentation of pruritus.[5,6] Therefore, it is postulated that pruritus in autoimmune thyroid disorders is a manifestation of cell-mediated immunity, which lowers the mast cell threshold for the release of histamine.[5] However, this does not adequately explain the non-response to antihistamines.[4,7,9]

This patient sought medical help for pruritus but the diagnosis was not apparent from history-taking alone. She had few symptoms of hyperthyroidism, which did not cause her distress as much as the pruritus. Thus, the clinical diagnosis of Graves' disease was made only after discovering that she had tachycardia and other clinical signs of hyperthyroidism. This is in contrast with other cases where symptoms and signs of hyperthyroidism are more obvious.[7]

Other systemic causes of pruritus should be considered and they include: hepatobiliary conditions (e.g. cholestasis and primary biliary cirrhosis), haematological disorders (polycythaemia rubra vera and lymphoma), paraneoplastic syndromes and uraemia.[8] The patient did not have any of these conditions. Studies have found that pruritus does not respond to conventional antihistamines and can only be resolved with treatment of hyperthyroidism.[4,7,9]

Anti-thyroid antibodies such as anti-thyroid peroxidase and anti-thyroglobulin antibody are non-specific for Grave's disease, but are indicative of the presence of autoimmunity in this patient. An association between autoimmune thyroid diseases with pruritus and urticaria has been suggested.[6] It is interesting to note that patient's symptoms that developed prior to the conception of her first child abated during her pregnancy. It recurred during the post-partum period. This is a common feature of autoimmune thyroid disorders such as Graves' disease and Hashimoto's thyroiditis.[10] Human chorionic gonadotrophins (HCG) have thyrotropic properties due to their structural similarities to TSH. In early pregnancy, raised HCG levels exacerbate Graves' disease .[11,12] However, the symptoms usually abate as the pregnancy progresses primarily because pregnancy causes a immunosuppressed state in the patient resulting in reduced levels of auto-antibodies.[11,12] Secondly, as a result of alterations in the levels of thyroid-binding globulin, free thyroxine levels drop.[11] Lastly, iodine consumed by pregnant mothers is also absorbed by the foetus, resulting in relative maternal iodine deficiency, which limits maternal thyroid hormone synthesis.[11]

In conclusion, underlying thyroid disorders should be considered in patients presenting with pruritus who do not respond to conventional anti-pruritic agents. This case also highlights the importance of a complete physical examination in arriving at an accurate diagnosis.

References

1. Sommer F, Hensen P, Böckenholt B, Metze D, Luger TA, Ständer S, et al. Underlying Diseases and Co-factors in Patients with Severe Chronic Pruritus: a 3-year Retrospective Study. *Acta Derm Venereol*. 2007;87(6):510-6.
2. Ramanathan M, Abidin M, Muthukumarappan M. The prevalence of skin manifestations in thyrotoxicosis--a retrospective study. *Med J Malaysia*. 1989;44(4):324-8.
3. Weetman AP. Graves' disease. *N Engl J Med*. 2000;343(17):1236-48.
4. Dunhill T. Thyrotoxicosis:

its surgical aspects. *Br Med J*. 1935;2(3908):1034-7.

5. Schocket AL. Chronic urticaria: pathophysiology and etiology, or the what and why. *Allergy Asthma Proc*. 2006;27(2):90-5.

6. Bagnasco M, Minciullo P, Schiavo M, Saraceno G, Gangemi S, Benvenga S, et al. Urticaria and thyroid autoimmunity. Thyroid 2011;21(4):401-10.

7. Teves D, Chase L. Intractable pruritus as the presenting complaint in a patient with Graves disease. Endocrinologist 2004;14(5):254-6.

8. Capaldi L, Bernhard J. Underlying Systemic Causes of Itch. J R Coll Physicians Edinb 2008;38:53-5.

9. Isaacs NJ, Ertel NH. Urticaria and pruritus: Uncommon manifestations of hyperthyroidism. Journal of Allergy and Clinical Immunology 1971;48(2):73-81.

10. Amino N, Tada H, Hidaka Y. Postpartum autoimmune thyroid syndrome: a model of aggravation of autoimmune disease. Thyroid 1999;9(7):705-13.

11. Glinoer D. The regulation of thyroid function in pregnancy: pathways of endocrine adaptation from physiology to pathology. *Endocr Rev*. 1997;18(3):404-33.

12. Mestman JH. Hyperthyroidism in pregnancy. Curr Opin Endocrinol Diabetes Obes 2012;19(5):394-401.

CASE REPORT

Reactive arthritis in tuberculosis: A case of Poncet's disease

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Abstract:

Reactive arthritis and erythema are uncommon presentations of tuberculosis (TB). Reactive arthritis in tuberculosis (TB) is known as Poncet's disease, a rare aseptic form of arthritis observed in patients with active TB. We report a case of Poncet's disease in a 20-year old man whose reactive arthritis overshadowed other clinical symptoms of TB resulting in delayed diagnosis and treatment. Although a conclusive diagnosis of Poncet's disease is not possible, reactive immunologic reactions such as reactive arthritis and erythema nodosum even without respiratory symptoms should raise suspicion on possible TB. Thus, taking a thorough medical history as well as performing relevant examinations and investigations for possible TB will help expedite the diagnostic process.

Introduction

Tuberculosis (TB) is a major public health concern. It remains the leading cause of death attributed to infectious diseases. An estimated 1.2–1.5 million died from TB in 2010.[1] Twenty one percent of the world's notified TB cases are in the Western Pacific Region which includes Malaysia.[2] In 2011, the World Health Organization (WHO) declared that global incidence rate of TB has decreased. However, in Malaysia, TB control has not reached a satisfactory level despite national control efforts.[1] In 2005, the incidence rate of TB was 86 per 100,000 persons and it has only dropped slightly to 82 per 100,000 in 2010. [1,3] Delayed diagnosis and low index of suspicion are the main reasons why the incidence of TB remains high.[4] Atypical presentation of TB can also be a contributing factor. Associated rheumatologic diseases such as reactive arthritis may overshadow typical clinical features of TB.

The clinical feature of reactive arthritis (also known as Reiter's syndrome) consists of joint inflammation often as a result of extra-articular bacterial infections, mostly originating from the urogenital, gastrointestinal and respiratory system .[11,12] Its estimated prevalence is 30-40 per 100,000 adults.[8,9] It is clinically described as asymmetrical oligoarthritis, usually in joints of the lower limbs.[10] This has posed a challenge to clinicians in establishing early diagnosis of reactive arthritis.[12] This case report describes reactive arthritis accompanying pulmonary tuberculosis.

Case summary

A 20-year old college student presented to an outpatient clinic with progressive painful ankle swelling for the past two weeks. This was preceded by an upper respiratory infection a week prior to the onset of the joint swelling. There was no history of fall or injury. His past medical history was insignificant; there were no symptoms of urinary infection or sexually transmitted infections. On examination, both

the ankles were mildly inflammed from distal part of the lateral malleoli to proximal part of the ankle joints. He had limited ankle movements. There was no vascular or neurological deficit.

He was treated with non-steroidal anti inflammatory drugs (NSAIDs) and asked to rest in bed. A week later, a mildly-raised, ill-defined and tender purplish blue rash appeared on the antero-lateral side of the shins. He was investigated for connective tissue disease, rheumatoid arthritis and erythema nodosum.

The patient was prescribed co-amoxycillin and clavulanic acid 625mg twice a day for a week in view of the possible diagnosis of reactive arthritis following a history of upper respiratory tract infection (e.g. streptococcal pharyngitis). He did not return for the next follow up visit. One month later, the patient returned to the clinic with loss of weight (3kg) and painless lumps at the left posterior cervical region. There were neither respiratory symptoms nor history of contact with TB patients. The ankle swelling and erythema nodusum over the shins had subsided. Examination of the neck revealed small lymph nodes on the left posterior cervical region with the biggest measuring 2x2 cm in diameter. They were firm, not tender and fixed. His full blood count was within normal range and the erythrocyte sedimentation rate was greater than 100mm per hour. Anti-nuclear antibody and rheumatoid factor were negative. The chest radiograph showed haziness over the left upper zone. The patient had a Mantoux reaction of more than 15mm with blistering. Biopsy of the lymph nodes revealed inflammatory lymphadenopathy with no acid-fast bacilli. Similarly, three sputum specimens were tested negative for acid-fast bacilli.

Subsequently, the patient developed cough and the chest radiograph revealed left upper lobe consolidation. A repeat chest radiograph showed left upper zone cavitation. The fourth sputum sample was tested positive for acid-fast bacilli. Standard anti-tuberculosis treatment regimen consisting of ethambutol, isoniazid, rifampicin, pyrazinamide (EHRZ) was initiated for the first two months followed by isoniazid, rifampicin (HR) biweekly for the subsequent four months. He responded positively to the treatment.

Discussion

This was a rare case of pulmonary tuberculosis with reactive arthritis and erythema nodosum. A diagnosis of TB made in more than 30 days from the initial consultation is considered a delay.[4] Diagnosis was delayed in this patient by 30 days due to lack of awareness, mixed presentations and lack of pulmonary involvement in the early stage of the disease.[4] The possibility of Poncet's disease was considered as patient presented with reactive arthritis followed by active TB . Poncet's disease is not a typical presentation of TB and is, therefore, not a well discussed topic in Malaysia. Even in an established private institute of rheumatology, Poncet's disease was the diagnosis made in 14% of the patients receiving treatment for some form of musculoskeletal problems and has concurrent TB. [7] Even in countries with high TB prevalence, diagnosis remains challenging due to atypical presentation of Poncet's disease. A review of 50 cases of Poncet's disease showed differences in characteristics: 30% of patients showed some features of oligoarthritis and the rest, polyarthritis.[6] Even though the majority of patients had lower limb involvement, some patients reported pain in the small joints of hands and feet.[5]

The diagnosis of tuberculous arthritis demands a high index of suspicion in order to secure joint functions; late treatment may result in joint damage.[13] Case studies of Poncet's disease highlight the need to differentiate tuberculous septic arthritis from TB-related reactive arthritis.[6,14] However, a review of 50 cases reports found that 70% of those diagnosed with Poncet's disease did not undergo a synovium examination.[5] TB septic arthritis often involves single joint and it requires evidence of acid-fast bacilli in the synovial fluid and synovial tissue biopsy. Sometimes, polymerase chain reaction-based tests are needed to assist the diagnosis.

However, TB-related reactive arthritis are mostly aseptic.[15,16] Evidence of increased mycobacterial activity can be challenging. In this patient, synovial fluid examination or x-ray of the ankles was not done since there was no clinical indication of joint effusion or joint destruction. The diagnosis of reactive arthritis and Poncet's disease were made based on clinical suspicions, especially when synovial fluid examination was not possible. Furthermore, close observation for recurrence is important. Synovium examination, though helpful, may not be necessary in all cases of arthritis.[5] Therefore; investigations must be geared towards early diagnosis of TB.

In this case, arthritis was initially considered because of possible streptococcal infection. In retrospect, the diagnosis could not be confirmed because no throat swab or anti streptolysin-O titre was done. Moreover, a week's course of co-amoxycillin and clavulanic acid would not have changed the course of post-streptococcal reactive arthritis because the treatment regime prescribed was shorter than the recommended 10-day duration.[17] The patient showed clinical signs of TB within six weeks of developing arthritis in the ankles. Studies have reported that immunologic response usually takes about six weeks, starting from the infection with TB bacilli.[18] Thus; TB is a more likely cause for the reactive arthritis than streptococcal infection.

Patients often respond quickly to the treatment of tuberculous reactive arthritis in Poncet's disease compared with tuberculous septic arthritis.[6,19] In this case, the arthritis subsided completely before the respiratory symptoms emerged and commencement of the anti-TB treatment. Many case reports documented the disappearance of reactive arthritis upon initiation of anti-TB treatment.[19] However, there was a case of Poncet's disease whereby the patient had intermittent episodes of poly-arthritis (with remission in between) before developing cough and dyspnoea. This occurred before the commencement of TB treatment and the arthralgia disappeared completely after six weeks of anti-TB treatment.[20] This suggests that the course of illness for TB-associated reactive arthritis may vary.

TB can also trigger erythema nodosum, a skin inflammation that results in reddish, painful, tender skin lesions. It can also occur as a result of sarcoidosis, streptococcal infection, histoplasmosis, and as reaction to drugs such as oral contraceptives, penicillin and sulphonamides.[14,21] Due to low prevalence of sarcoidosis among Asians, it was not considered in this patient.[22] Moreover, erythema nodosum is a presentation of an underlying septal panniculitis, a reactive process to several stimuli and thus, inconclusive of any particular illness.[20] Therefore, no chest x-ray was performed when there were signs of erythema nodosum. Tuberculin reaction to TB was postulated as tuberculo-protein hypersensitivity. Erythema nodosum aggravated the reaction as seen in the Mantoux tuberculin skin test .[14,15] A negative result on the other hand, may strengthen the evidence of excluding TB as a diagnosis.[15]

In conclusion, the diagnosis of TB in some patients is delayed because of multiple presentations involving non-pulmonary sources. Even though it is not possible to come to a conclusive diagnosis of Poncet's disease, immunologic reactions such as reactive arthritis and erythema nodosum, even without respiratory symptoms, should alert primary care physicians to search for symptoms and signs of TB. Thus, taking a thorough medical history, performing relevant examinations and investigations may help expedite the diagnostic process.

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References

1. World Health Organisation. Global Tuberculosis Control: WHO Report 2011. Geneva: WHO Press. 2011
2. World Health Organisation. Tuberculosis Control in the Western Pacific Region: 2010 Report. Geneva: WHO Press; 2010.
3. Aziah AM. Tuberculosis in Malaysia: combating the old nemesis. *Med J* Malaysia. 2004; 59(1): 1-4
4. Chang CT, Esterman A. Diagnostic delay among pulmonary tuberculosis patients in Sarawak: a cross-sectional study. *Rural and Remote Health*. 2007;7:1-8
5. Kroot EJA, Hazes JMW, Colin EM, Dolhain RJEM. Poncet's disease: reactive arthritis accompanying tuberculosis. Two case reports and a review of the literature. *Rheumatology*. 2007;46: 484–9.
6. Ideguchi H, Ohno S, Takase K and et al. A case of Poncet's disease (tuberculous rheumatism). *Rheumatol* Int. 2009; 29:1097–9. doi 10.1007/s00296-008-0795-1
7. Chopra A, Joshi VL, Joshi V, Rane R, Anuradha V. Old enemy on a difficult terrain: tuberculosis in rheumatology practice with focus on uncommon extrapulmonary affection. *Indian Journal of Rheumatology*. 2011; 6(1): pp. 44–54
8. Rihl M, Klos A. Reactive arthritis. *Best Practice & Research Clinical Rheumatology*. 2006;20(6):1119-37
9. Hannu T. Reactive arthritis or post infectious arthritis? *Best Practice & Clinical Rheumatology*. 2006;20(3):419-33.
10. Hannu T, Mattila L and et al. Compylobacter-triggered reactive arthritis: a population based study. *Rheumatology*. 2002;41:312-8
11. Toivanen A, Toivanen R. Reactive arthritis. *Best Practice & Research Clinical Rheumatology*. 2004; Vol. 18(5), pp. 689–703.
12. Storla DG, Yimer S, Bjune GA. A systematic review of delay in the diagnosis and treatment of tuberculosis. *BMC Public Health*. 2008; 8: 15. doi 10.1186/1471-2458-8-15.
13. Haldar S, Ghosh P, Ghosh A. Tuberculous arthritis-the challenges and opportunities: observations from a tertiary center. *Indian Journal of Rheumatology*. 2011; 6(1):62-8.
14. Oguntono AR, Adelowo OA, Oghenetega O. Poncet's disease (tuberculous rheumatism) in Nigeria: A case report. *Nigerian Medical Practitioner*. 2008;53(3):26-7
15. Whig J, Mahajan V, Kasyap A, Gupta S. Erythema Nodosum: Atypical presentation of common disease. *Lung India*. 2010; 27:181-2.
16. Heinemann C, Kaatz M, Elsner M. Erythema induratum of Bazin and Poncet's disease – successful treatment with antitubercular drugs. *Journal of the European Academy of Dermatology and Venereology*. 2003; 17(3):334–6.
17. Amstrong C. AHA Guidelines on Prevention of Rheumatic Fever and Diagnosis and Treatment of Acute Streptococcal Pharyngitis. *Am Fam Physician*. 2010;81(3):346-59
18. Smith I. Mycobacterium tuberculosis Pathogenesis and Molecular Determinants and Virulence. *Clin. Microbiol. Rev*. 2003;16(3):463-96
19. Abdulaziz S, Almoallim H, Ibrahim A, Samannodi M, Shabrawishi M, Meeralam Y, Abdulmajeed G, Banjar G, Qutub W, Dowaikh H. Poncet's disease (reactive arthritis associated with tuberculosis): retrospective case series and review of literature. *Clin Rheumatol*. 2012; 31:1521– 8.
20. Heidari B, Buani K. Poncet's disease: A report of four cases and review of the literature. *Medical Journal of the Islamic Republic of Iran*. 2003; 17(1): 81-3
21. Psychos DN, Voulgari PV, Skopouli FN, et al. Erythema Nodosum: the Underlying Conditions. *Clin Rheumatol*. 2000 19:212–6.
22. Anantham D, Ong SJ, Chua KL, Fook-Chong S, Hsu A, Eng P. Sarcoidosis in Singapore: Epidemiology, clinical presentation and ethnic differences. *Respirology*. 2007; 12, 355–60

CASE REPORT

Hot water immersion as a treatment for stonefish sting: A case report

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Abstract:

The North Borneo state of Sabah is known worldwide for its beautiful islands and dive sites. Local hospitals deal with a number of marine-related injuries, including marine fauna envenomation by Scorpaenidae and Synanceiidae families of fish. We report a case of a tourist who presented with excruciating pain on her right foot after stepping on a stonefish. Despite being given parenteral analgesia and regional anaesthesia, the pain persisted. Her pain improved after she soaked her foot in hot water for about 30 minutes. No further treatment was required. We reviewed the literature comparing this inexpensive mode of treatment with other conventional treatments. We also explored the possibility of using hot water immersion for treatment of envenomation by other types of marine animals.

Introduction

The East Malaysian state of Sabah is a well-known destination for tourists as well as divers because of its beautiful islands and world-renowned dive sites. A significant proportion of the state's population resides along the coastline, which contributes to the high number of sea-related activities and occupation. Therefore, marine fauna-related injuries are often encountered by the local emergency services.

The *Scorpaenidae* and *Synanceiidae* families of venomous sea fish are mainly found in the shallow tropical waters of the Indo-Pacific region.[1] Both families share similar features, and consist of hundreds of species that are divided into three groups based on the structure of their venom organs and toxicity. They are the genera *Pterois* (lionfish) and Scorpaena (scorpionfish) of the Scorpaenidae family, and *Synanceia* (stonefish) of the *Synanceiidae* family. The venom organs comprise 12 or 13 dorsal, 2 pelvic and 3 anal spines, each covered with an integumentary sheath and a pair of glands that secrete venom along the grooves at the anterolateral region of the spine when mechanical pressure is applied[1,2]. The *Pterois* has long and thin spines with small venom glands and less potent venom while the *Scorpaena* has shorter and thicker spines with larger glands and more potent venom. Among the three groups, the *Synanceia* genus of fish possesses the most potent, possibly lethal venom.[3]

The venom of *Scorpaenidae* and *Synanceiidae* fish are heat-labile and has high molecular weight proteins with antigenic properties and enzymes, quite similar to other marine venoms.[4] The venom is a mixture of proteins, including hyaluronidase which is responsible for connective tissue destruction, and a protein lethal factor that has cytolytic, neurotoxic and hypotensive activity.[5] The predominant symptom is pain at the affected area, which may range from mild to severe depending on the number and type of stings, species of

fish, amount of venom injected, and age and health status of the victim.[2] It may radiate to the entire limb and peaks at 60 to 90 minutes, and may last up to 12 hours if left untreated. Victims may also experience pain at regional lymph nodes, local erythema with evidence of sting marks, swelling, oedema, and numbness.[6] Various systemic manifestations such as nausea, diaphoresis, breathing difficulties, abdominal or chest pain, weakness, delirium, seizures, syncope, arrhythmias and hypotension have been reported.[2,4]

The venom protein's instability to heat is the basis of the hot water immersion treatment. Heat causes the denaturalisation of the protein that renders the venom inactive. It has been suggested that this form of treatment also modulates pain receptors in the nervous system to reduce of pain.[7]

Case report

A 47-year old lady was brought to the Emergency Department (ED) complaining of severe pain on her right foot after stepping on a stonefish while diving off the coast of Kota Kinabalu. She rated her pain score to be 8/10. She did not complain of any systemic symptoms. She was afebrile, not tachypnoeic, blood pressure 139/87 mmHg and pulse rate 77 beats per minute. On examination of the patient, her right first toe was swollen and red with no obvious puncture wound. There was no foreign body or fish spine seen. The toe was very tender and she complained of pain even on slight movement. Flexion of her ankle was also painful. The erythema extended up to her right calf which was mildly tender. Capillary refill of her distal digits was normal. The rest of the examination was unremarkable with no signs of anaphylaxis.

Initially, 75mg of intramuscular diclofenac was administered. Twenty minutes later, there was no improvement in her pain, and she was given 5mg of intravenous morphine; however, the pain worsened. Regional anaesthesia in the form of an ankle block of the right foot was applied. Despite this, the pain remained severe.

Subsequently, we soaked the patient's right foot in a metal basin filled with hot water up to the patient's ankle for about 30 minutes. We used the elbow skin test to check the water temperature. The heat was adjusted to the highest temperature that the skin was able to tolerate as suggested in the literature. Hot water was added to the basin every 10 minutes to maintain the temperature. Her pain score reduced to 5/10 at about 15 minutes after the treatment, and to 1/10 an hour later.

A re-examination of the foot showed reduction of swelling and tenderness. Distal capillary refill was immediate and movement of the toe was non-tender. There was also no evidence of scalding or burn from the hot water immersion treatment. She was observed in ED for another two hours. She was then discharged with oral pain analgesia and anti-histamines.

Discussion

The use of heat to treat marine envenomation was first recorded in 1758, when German fishermen applied hot poultice onto sting wounds caused by weever fish.[8] Heat treatment, therefore, has been used traditionally for centuries to treat fish stings. Heat was administered in the form of hot water, vinegar, stones and even hot urine.[8] Various methods of hot water therapy have been applied, including hot water immersion in a basin, hot showers and thermal packs[7]. The current practice is to submerge the affected limb into non-scalding hot water at the temperature of 45°C for 30 to 90 minutes until the pain subsides. It is important that the water temperature is maintained by continuous monitoring and adding hot water. Lau et al found that a thermal isolator (e.g. a portable ice chest) is able to maintain the temperature longer than a plastic sharps bin or a metal basin.[9] The group recommended the use of aluminum foil or plastic wrap to cover the container, larger volume of water (8 to 10 litres), and a

thermometer to monitor the temperature of water. We utilised a metal basin to treat our patient with hot water immersion therapy and tested the water temperature regularly. We could have regulated the temperature more accurately by using a thermometer.

In cases of *Scorpaenidae* or *Synanceiidae* envenomation, there are no studies done specifically to compare hot water immersion alone to other modes of treatment. Most case studies in the literature report hot water immersion as the initial treatment for this type of marine envenomation, and suggest concomitant use with parenteral analgesia or local anaesthesia to control the pain. A poison centre in San Francisco reported favourable outcome using hot water immersion to treat Scorpaenidae stings, with 80% out of the 94% patients that received the treatment experiencing complete pain relief.[10] Two case reports acknowledged the effectiveness of hot water immersion in controlling pain without the use of analgesic drugs, although one case suffered recurrence of pain and acute carpal tunnel syndrome within 24 hours after resolution of pain.[11,12] A case series by Lee et al reported tissue necrosis in a victim of stonefish sting who did not receive hot water immersion treatment. This is possibly due to the persistence of the active venom in the wound.[13] The group went on to recommend it as the first line of treatment before supplementing the pain control with additional analgesia. However, a retrospective study of 30 cases of stonefish envenomation in Singapore by Ngo et al observed that most victims required both parenteral analgesia (intramuscular pethidine or diclofenac) and hot water immersion therapy.[6] Thirty percent of the patients required additional analgesia, and five were warded for wound complications. It is, therefore, difficult to conclude whether the clinical outcomes, the need for additional analgesia and wound complications are related to the use of hot water immersion because most cases used both treatment modalities.

There is an antivenom for stonefish envenomation prepared from equine plasma that is immunised by the venom.[14] This antivenom is unavailable in our setting, but the literature has suggested that it is rarely needed unless there is persistent pain despite multiple treatments or the presence of systemic features of envenomation.[11, 12, 13, 14] The stonefish antivenom has been shown to cross-react with scorpionfish venom, suggesting similar biochemical properties of *Scorpaenidae* and *Synanceiidae* venoms.[15] It is perhaps inappropriate to compare hot water immersion to antivenom treatment, because hot water soaks provide symptomatic relief and possibly inactivate the venom locally, thus prevent the spread of the injury; whilst the antivenom is a parenteral medication that inactivates the venom in the systemic circulation. Presently, there are no detailed studies proving the thermo-labile feature of the venom. Thus it can be argued that the diffuse noxious inhibitory control theory of pain, which is when a painful stimulus is inhibited by another, could be responsible for the reduction of the pain of the sting by hot water immersion.[16] Our case, however, seemed to support the idea that the venom protein is denatured by heat treatment, because in spite of using pharmacological treatments, the pain did not resolve until hot water immersion therapy was initiated.

Another issue with the use of hot water immersion therapy is the possibility of enhancing the proliferation of marine organism especially Vibrio vulnificus, a type of aquatic bacteria responsible for causing necrotising fasciitis in fish sting victims.[17] The temperature of the water seems to increase the activity and proliferation of the bacteria. Although antibiotic prophylaxis is controversial in the management of stonefish envenomation, antibiotic coverage may be appropriate in stonefish sting victims, especially in areas with high prevalence of vibrio infection. This could explain the reason for prophylactic antibiotic administration in some stonefish envenomation cases.[6] One study has advocated the use of prophylactic antibiotics to cover for vibrio and other marine organism as puncture sting wounds are at risk of secondary infection.[13]

In this case, however, antibiotic prophylaxis was not prescribed as there were no puncture wound seen and hence, the risk of infection was probably lower. Several antibiotics have been suggested in the literature for *Scorpaenidae* and *Synanceiidae* envenomation including broad-spectrum antibiotics (e.g. amoxicillin-clavulanate, ceftazidime), ciprofloxacin and doxycycline.[13,17]

Hot water immersion therapy has also been used for several other types of marine envenomation.[4] Hot water immersion therapy has been assessed and found to be effective in treating puncture-type stings caused by marine vertebrates, and increasingly, for surface-type stings with nematocysts by jellyfish.[7] Loten et al found that hot water is more effective than ice packs in controlling the pain of bluebottle jellyfish stings, with 87% of patients reporting reduced pain with hot water immersion compared to only 33% who used ice packs.[18] It has also been shown that box jellyfish venom lethality decreases as the water temperature increases above 39°C and with prolonged immersion.[19] Hot water immersion therapy has been recommended for various venomous fish including stingrays, catfish, stonefish, scorpionfish and lionfish, Portuguese Man-Of-War or physalia sp. jellyfish, sea urchins and. to some extent, box jellyfish and Irukandji jellyfish[1,2,4].

Conclusion

In the event of envenomation by Scorpaenidae and Synanceiidae family of venomous fish, non-scalding hot water immersion at 45°C up to 30 minutes appears to be the appropriate initial treatment. Victims should be closely monitored and supplemented with extra analgesia if needed. Antibiotic coverage should be considered for the patients receiving this treatment especially those with deep puncture wounds and are at risk of developing vibrio necrotising fasciitis. This method shows favourable results in the literature, not only in stonefish stings, but also other venomous fish spine and invertebrate stings. Therefore, this easy and inexpensive mode of treatment should be considered for the treatment of marine envenomation.

Conflict of interest statement

We declare that we do not have any conflict of interest. This paper was presented as a poster at the 3rd International Conference on Rural Medicine 2011 (ICORM) held in Kota Kinabalu, Sabah on 22-24 November 2011.

Acknowledgement

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How does this paper make a difference to General Practice?

1. It is understood that most of the patients on holidays are seen by Primary Care Physicians first before coming to the ED. Hot water immersion is a simple and effective way of treating a patient with stone fish envenomation. This technique should be tried early, on-site as a first aid measure before even bringing the patient into the nearest ED.

2. This simple knowledge could be used by doctors to ensure that the patient is comfortable and without pain as soon as possible. Although highly potent pain medication was used in this case, we found that sometimes the simplest method such as hot water immersion is most effective.

3. The review of literature would be an interesting read for most primary care physicians to support their management of similar cases.

References

1. 1. Fernandez I, Valladolid G, Varon J, Sternbach G. Encounters with venomous sea-life. J Emerg Med 2011;40(1):103-12.
2. Auerbach PS. Marine envenomations. N Engl J Med 1991;325:486-93.
3. Gallagher SA. Lionfish and stonefish. In: Emergency Medicine. Available at: http://www.emedicine.com/emerg/topic300.htm. Accessed 2011.
4. Singletary EM, Rochman AS, Bodmer JCA, Holstege CP. Envenomations. Med Clin N Am 2005;89:1195-224.
5. Khoo HE. Bioactive proteins from stonefish venom. Clin Experimental Pharmacol Physiol 2002;29:802-806.
6. Ngo SYA, Ong SHJ, Ponampalam R. Stonefish envenomation presenting to a Singapore hospital. Singapore Med J 2009;50(5):506-9.
7. Atkinson PRT, Boyle A, Hartin D, McAuley. Is hot water immersion an effective treatment for marine envenomation? Emerg Med J 2006;23:503-8.
8. Russell FE. Weever fish sting: the last word. Br Med J 1983;287:981-2.
9. Lau KK, Chan CK, Tse ML, Lau FL. Hot water immersion therapy with a thermal isolator in patient with marine envenomation. Hong Kong J Emerg Med 2011;18:204-9.
10. Kizer KW, McKinney HE, Auerbach PS. *Scorpaenidae* envenomation: a five-year poison center experience. JAMA 1985;253(6):807 [abstract].
11. Ling SKK, Cheng SC, Yen CH. Stonefish envenomation with acute carpal tunnel syndrome. Hong Kong Med J 2008;15(6):471-3.
12. Yamamoto R, Suzuki M, Hori S, Aikawa N. Stonefish "Okoze" envenomation during food preparation. Keio J Med 2010;59(1):19-22.
13. Lee JYL, Teoh LC, Leo SPM. Stonefish envenomation of the hand – a local marine hazard: a series of 8 cases and review of the literature. Ann Acad Med Singapore 2004;33(4):515-20.
14. Stonefish antivenom product information sheet. Australia, CSL Limited. Available at: http://www.csl.com.au. Accessed November 2011.
15. Gomes HL, Menezes TN, Carnielli JBT, Andrich F et al. Stonefish antivenom neutralizes the inflammatory and cardiovascular effects induced by scorpionfish *Scorpaena plumieri* venom. Toxicon 2011;57:992-9. [abstract]
16. Muirhead D. Applying pain theory in fish spine envenomation. South Pac Underwater Med Soc J. 2002;32(3):150-3.
17. Tang WM, Fung KK, Cheng VC, Lucke L. Rapidly progressive necrotising fasciitis following a stonefish sting: a report of two cases. J Ortho Surg 2006;14(1):67-70.
18. Loten C, Stokes B, Worsley D, Seymour J, Jiang S, Isbister GK. A randomised controlled trial of hot water (45°C) immersion versus ice packs for pain relief in bluebottle stings. Med J Aust 2006;184:329-33.
19. Carrette TJ, Cullen P, Little M, Peiera PL, Seymour JE. Temperature effects on box jellyfish venom: a possible treatment for envenomed patients? Med J Aust 2002;177:654-5.

CASE REPORT

Sequelae of neglected senile cataract

Azhany Y, Hemalatha C, Nani D, Rosediani M, Liza-Sharmini AT

Azhany Y, Hemalatha C, Nani D, Rosediani M, Liza-Sharmini AT. Sequelae of neglected senile cataract. Malaysian Family Physician 2013;8(1):33-7

Keywords:
cataract, phacomorhic, phacolytic, glaucoma

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Abstract

Cataract is the most common cause of blindness in the world. An attack of phacolytic and phacomorphic glaucoma as a result of neglected cataract constitutes a medical emergency that must be addressed immediately. Ocular emergencies such as these is challenging for the surgeon with guarded or poor prognosis. We describe the presentation, management and prognosis of three cases of phacomorphic and phacolytic glaucoma. All three patients underwent aggressive management of intraocular pressure. Despite successful cataract operation with implantation of intraocular lens, there was only mild improvement of the vision. Optic nerve and pupil functions were permanently affected following the insult. Phacomorphic and phacolytic glaucoma present a very challenging problem to the surgeon with poor visual outcome. Public health education and awareness are important and health workers should encourage patients with cataract to seek early treatment for better prognosis.

Introduction

An estimated 45 million people worldwide fulfil the World Health Organization's criterion for blindness, defined as best corrected vision of less than 3/60 in the better seeing eye.[1] Nearly 135 million people are visually disabled ('low vision') and about 80% of blindness is avoidable (preventable or curable). Nine out of 10 of people with blindness live in a developing country.[1] The Malaysian National Eye Survey in 1996 found that cataract was the leading cause of blindness (39%) followed by retinal diseases (24%).[2]

Cataracts are a slow progressive condition which, if left treated, will result in patients developing phacomorphic or phacolytic glaucoma, typically in the sixth decade.[3] Phacolytic glaucoma (PG) is the sudden onset of open-angle glaucoma while phacomorphic glaucoma is secondary angle-closure glaucoma due to lens intumescence. A 1998 study at an eye hospital in Nepal found that 72% of cataract patients had phacomorphic glaucoma and the rest phacolytic glaucoma.[3] The National Cataract Surgery Registry of Malaysia reported that in 2004, out of 18,392 cataract surgeries performed, 118 patients had phacomorphic cataracts while 79 patients had phacolytic glaucoma.[4] A study by Ho et al noted that lack of awareness, scarce knowledge of the disease and unwillingness to seek early medical intervention contributed to the development of complicated cataracts.[5]

Cataract surgery in those with phacomorphic glaucoma poses challenges due to high intraocular pressure (IOP), risk of expulsive hemorrhage, positive pressure, and zonular dialysis.[6] The three case studies below examine untreated and complicated cataracts.

Case 1:

A 77-year old Malay man presented to an outpatient clinic with a five-day history of

progressive left-sided headache. The patient experienced nausea but no vomiting. He has a past history of hypertension. His blood pressure was 190/100mmHg and he was admitted to a medical ward for further management. His headache worsened after admission. His left eye turned red and the cornea became cloudy. Further history revealed that his vision of the left eye had deteriorated over the past six months. There was no history of eye trauma, contact with patients with conjunctivitis or recurrent episodes of ocular pain. He was referred to an ophthalmologist for further assessment.

On examination, his visual acuity (VA) was 6/24 on the right eye (pin hole (PH) of 6/12) and he was only able to perceive light on left eye. Anterior segment examination of the left eye showed inflammed conjunctiva with circumciliary injection pattern (Figure 1). There was no eye discharge. The cornea was hazy as a result of generalised oedema. The anterior chamber was shallow and there was presence of whitish lens material. She had a mid-dilated left pupil which was not reactive to light. Reverse relative afferent pupillary defect was noted and the red reflex was absent. Ocular examination revealed swollen and intumescent cataract. Intraocular pressure of the left eye was high at 54mmHg. His right eye showed immature cataract with an IOP of 12mmHg.

In view of high IOP and swollen mature cataract, he was diagnosed to have phacomorphic glaucoma in the left eye and was transferred to a tertiary hospital. The patient was advised to undergo a cataract operation and was given a guarded prognosis. Topical timolol, dorzolamide, latanoprost and oral acetalzolamide were administered which led to the reduction of IOP (34mmHg). The headache improved and the BP was stabilised at 150/80mmHg after oral beta blocker was given. The patient underwent an extracapsular cataract extraction (ECCE) with intraocular lens (IOL) implantation under local anaesthesia (LA). Post-operatively, his VA improved to 1/60 and IOP 14mmHg. On the third day, without antiglaucoma drugs, his VA improved to 6/60 (PH 6/36) and IOP 18mmHg. His cornea was clear but the pupil remained mid dilated with poor reaction to light. There was hyperaemia of the optic nerve but his retina was normal.

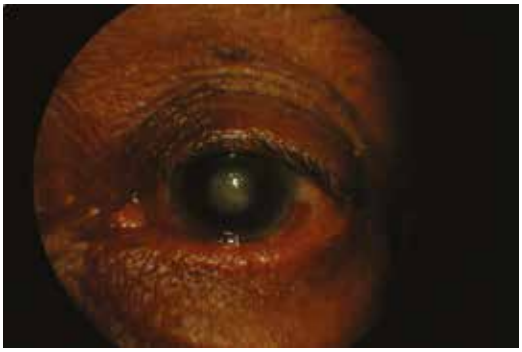

Figure 2.
Phacomorphic glaucoma in the left eye at the time of cataract extraction

Case 2:

An 87-year old woman presented with bilateral poor vision that had worsened in the past three months. There was no redness. Her VA was at level of 'count finger' (CF) on the right eye and perception to light (PL) on the left eye. The pupillary reaction to light was normal. She was diagnosed to have mature cataract and was referred to an ophthalmologist.

The patient developed a two-day history of left sided headache without nausea or vomiting before the consultation. Ocular examination revealed mild circumciliary injection of the conjunctiva and a hazy cornea. (Figure 2) The anterior chamber was deep with whitish lens material at the inferior part. The patient had mature cataract and the left pupil was dilated. The IOP was 52mmHg. Her right eye also showed mature cataract. In view of high IOP with presence of mature cataract and lens materials in the anterior chamber, she was diagnosed with phacolytic glaucoma. She agreed to undergo a cataract operation. Patient successfully underwent left extracapsular cataract extraction (ECCE) with IOL implantation under LA. On day one postoperatively, the VA of her left eye

remained at CF and the IOP 9 mmHg. At day seven postoperatively, her VA was improved to 6/36 (same for PH). The IOP remained normal at 12 mmHg without anti-glaucoma drugs. Her left pupil remained mid-dilated and non-reactive to light. The retina and optic nerve appeared normal.

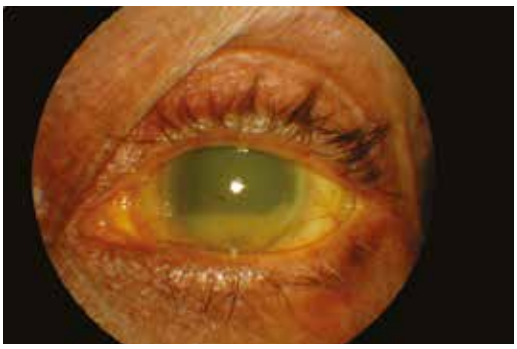

Figure 2.
Phacolytic glaucoma in the left eye

Case 3:

A 60-year old Chinese man presented to an eye clinic with a two-week history of redness and pain in the right eye. There was no eye discharge, recent trauma or contact with people with conjunctivitis. He had a history of blunt force trauma to the right eye 10 years ago and was treated conservatively. His right eye vision progressively worsened over the years. He lost his vision completely in the last three years. There was no family history of blindness or glaucoma. His left eye vision was good but was sensitive to glare at night.

His right eye VA was at the level of hand movement (HM). On examination, his left VA was 6/9 and PH of 6/6. There was circumciliary conjunctival injection on the right side and the corneal was hazy due to oedema. His right anterior chamber was deep and the pupil was fixed and mid-dilated. There was whitish lens material at the angle of the anterior chamber. She also had a posterior subluxated cataractous lens and the IOP was 52mmHg. His left eye was normal with early cataract and the IOP was 14mmHg. There was a reverse relative afferent pupillary defect (RAPD). In view of the high IOP with posterior subluxated mature cataract and presence of lens materials in the anterior chamber, she was diagnosed to have phacolytic glaucoma with subluxated lens. The patient was admitted to the eye ward for stabilisation of the IOP medically and planned for intracapsular cataract extraction (ICCE) and anterior chamber IOL under LA.

On day one postoperatively, the VA of his right eye remained at HM and the IOP was 10mmHg. Six months later, the VA was 6/60 with the IOP of 16mmHg without medication. The anterior chamber IOL was stable. (Figure 3) The right pupil was not reactive to light and the optic disc was pale. (Figure 4a and 4b)

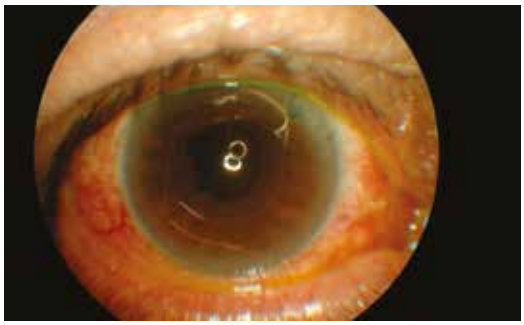

Figure 3.
Post-operative finding of right eye showed anterior chamber intraocular lens

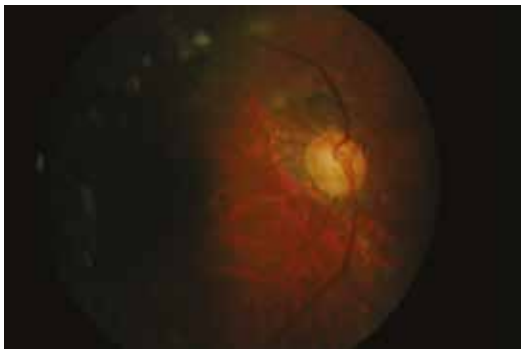

Figure 4a.
Optic atrophy of right eye

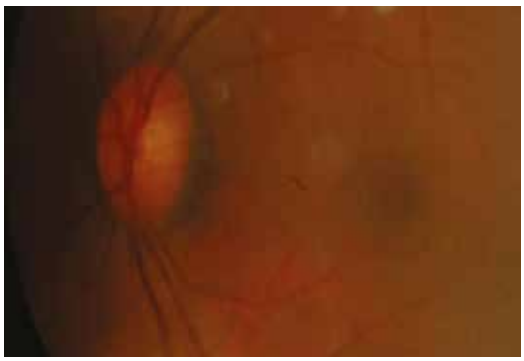

Figure 4b.
Normal optic disc of left eye

Discussion

Cataract and glaucoma are the main causes of visual impairment in the world, particularly among the elderly. Both conditions can occur either simultaneously or sequentially. As illustrated by the three cases above, a delay in the extraction of mature cataracts may result in either phacomorphic or phacolytic glaucoma. Lack of knowledge regarding the nature and progression of cataract, concomitant chronic diseases, old age and financial constraints are the primary reasons for a patient's delay in seeking medical help[7]. In addition, some health care providers perceive that cataracts in elderly are not dangerous and there is no screening programme for cataract locally.

Recognition of the red flags in cataract is important in identifying patients who are at risk of developing complications such as glaucoma. Patients may present with non-specific complains such as unilateral headache. Removing a cataract only when it becomes mature is no longer practiced in most parts of the world. This is because a delay in cataract surgery may lead to multiple lens-related complications. Phacomorphic glaucoma (secondary close angle glaucoma), phacolytic glaucoma (secondary open angle glaucoma) and hypermature cataract with subluxated lens are among the most common problems. Phacomorphic glaucoma occurs as a result of forward displacement of the mature cataract, giving rise to pupillary block or iridocorneal angle closure. Phacolytic glaucoma is characterised by an acute rise in IOP associated with aqueous flare and cell in advanced cataracts. The pathogenic mechanism is attributed to microleakage of high molecular weight lens proteins through an intact anterior lens capsule. This causes an inflammatory response leading to obstruction of the aqueous drainage channels by proteins, protein-laden macrophages, and inflammatory debris.8 Hypermature cataract with subluxated lens can cause the lens to be dislocated anteriorly or posteriorly causing complications such as inflammation and glaucoma.

Cataract extraction remains the only definitive treatment for an intumescent cataract. Cataract surgery in phacomorphic glaucoma is challenging due to the high intraocular pressure that increases the risk of expulsive hemorrhage. Positive pressure and zonular dialysis also makes surgery difficult.[6] Phacomorphic glaucoma, characterised by a shallow anterior chamber with high IOP, is a common condition in developing countries. Extra-capsular cataract extraction requires a large incision in the globe and with very high IOP; it increases the risk of complications such as astigmatism, optic atrophy and blindness [6, 9.] Complicated cataracts carry a poor prognosis. Surgical intervention relieves patients' symptoms, but may not restore the vision. Patients with complicated cataracts can eventually develop corneal decompensation, glaucoma and optic atrophy. In view of this, there is a need to educate patients and health workers of the dangers of neglected cataracts as the prognosis is poor especially when treatment is delayed.[8]

Conclusion

Early diagnosis, a comprehensive medical eye evaluation and timely surgical intervention are crucial in the management of cataract. Structured community programmes are essential to increase awareness on the risks of cataract complications. Cataract complications are preventable and family physicians play an important role in identifying and referring these high-risk patients early for management.

References

1. Bjorn T. The global initiative for the elimination of avoidable blindness. *Community Eye Health Journal*.1998;11:1-3
2. Zainal M, Ismail SM, Ropilah AR, Elias H et al. Prevalence of blindness and low vision in Malaysian population. Results from National Eye Survey 1996.*Br J*

Ophthalmol.2002;86:951-6

3. Pradhan D, Hennig A, Kumar J, Foster A. A prospective study of 413 cases of lens-induced glaucoma in Nepal. *Indian J Ophthalmol*. 2001;49:103–7.

4. Goh PP, Shamala R, Rajalakshmi G, Ronald AD. The 3rd Report of the National Cataract Surgery Registry 2004. National Cataract Surgery Registry,Malaysia;2004

5. Ho T, Law N M, Goh L G, Yoong T. Eye diseases in the elderly in Singapore. *Singapore Med J* 1997; 38:149-55

6. Gressel MG. Lens-induced glaucoma. Duane's Clinical Ophthalmology. 5th ed. Philadelphia: Lippincott Williams and Wilkins; 1998. 554

7. Tomey KF, al-Rajhi AA. Neodymium: YAG laser iridotomy in the initial management of phacomorphic glaucoma. *Ophthalmology*. 1992;99:660–5

8. Rosenbaum, J. T., Samples, J. R., Seymour, B., Langlois, L, et al. Chemotactic activity of lens proteins and the pathogenesis of phacolytic glaucoma. *Arch Ophthalmol*. 1987; 105(11), 1582.

9. Ramakrishanan R, Maheshwari D, Abdul Kader M, Singh R, et al.Visual prognosis, intraocular pressure control and complications in phacomorphic glaucoma following manual small incision cataract surgery. *Indian J Ophthalmol*. 2010; 58(4): 303–6

CASE REPORT

Dangerous diplopia: A case of pansinusitis

Haizul IM, Umi Kalthum MN

Haizul IM, Umi Kalthum MN. Dangerous diplopia: A case of pansinusitis. Malaysian Family Physician 2013;8(1):38-41

Keywords:
diplopia, headache, sinusitis, sixth nerve palsy

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Abstract:

Purpose:
To report a case of pansinusitis after swimming in a common pool

Case report:
Acute sinusitis is ranked the fifth-most common indication for antibiotic prescriptions.[2] Although sinusitis is often diagnosed clinically, cases that are resistant to conventional antibiotic therapy or recurrent cases may require diagnostic imaging in order to confirm the diagnosis. The complications of sinusitis, though rare, may lead to serious consequences if not diagnosed and treated early. We report a 33-year old man with pansinusitis presenting with a sudden onset of peripheral gaze diplopia associated with progressive frontal headache. His symptom resolved completely after he was given intravenous antibiotics and a nasal decongestant.

Case Report

A 33-year old man presented to the eye clinic with a sudden onset of double vision associated with progressive frontal headache for three weeks. He did not complain of any eye pain, fever, neurological symptoms, or reduction in visual acuity. A month ago, after swimming and diving in a common pool, he started having symptoms of sinusitis such as headache and nasal congestion (also known as pool sinusitis). The headache persisted though he completed a full five-day course of amoxicillin-clauvulanic acid (Augmentin) followed by one-week course of azithromycin. The patient was otherwise healthy.

Physical examination found eye abduction was limited to 80% bilaterally with corresponding diplopia. He had good visual acuity in both eyes without any sign of optic nerve dysfunction. The anterior segment examination was unremarkable. Both optic discs were pink without signs of swelling (Figure 1). The patient was afebrile and had stable vital signs.

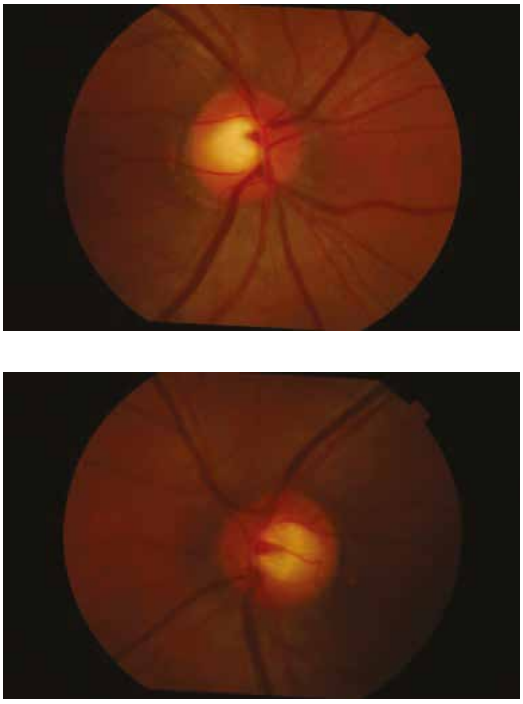

Figure 1.
Fundus photos show normal-looking optic discs without evidence of swelling

The blood cell count was normal, but the erythrocyte sedimentation rate was elevated at 72 mmol/h. Contrast-enhanced computed tomography (CECT) and magnetic resonance imaging (MRI) showed mucosal thickening of the anterior and posterior ethmoidal, sphenoid, and both maxillary sinuses, which were consistent with pansinusitis (Figure 2). No obvious brain abscess was noted.

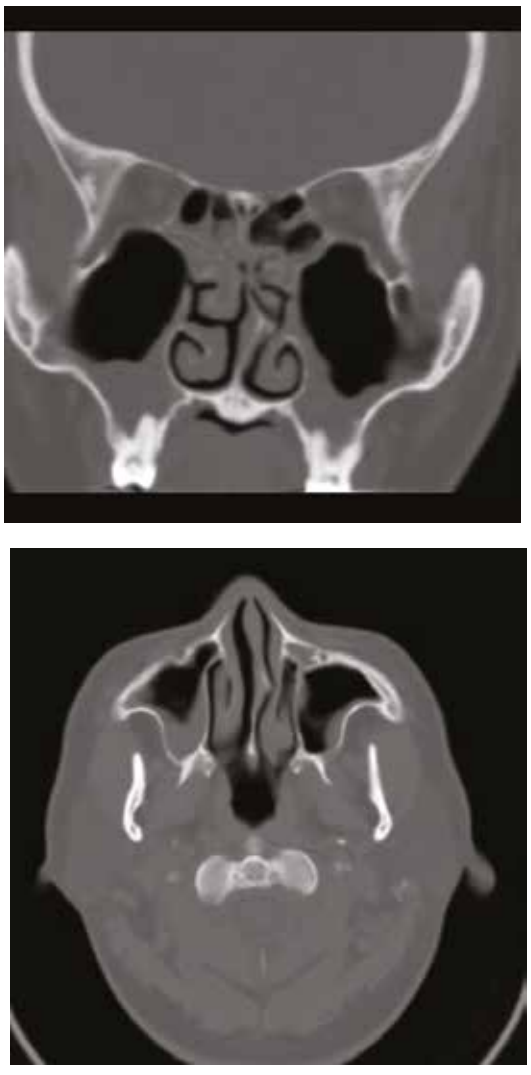

Figure 2.
Contrast enhanced computed topography scan of the brain and orbit shows mucosal thickening involving posterior ethmoidal sinus, sphenoid sinus and both maxillary sinuses.

The patient was referred to the otorhinolaryngology unit but endoscopic examination revealed no abnormality. He was later diagnosed with pansinusitis with secondary bilateral sixth cranial nerve palsy. The patient was admitted to the ward and given a course of intravenous antibiotics consisting of ceftriaxone (2g four times a day) and metronidazole (500 mg three times a day), along with antihistamines and oral dexamethasone (8 mg three times a day).

The results of the cerebrospinal fluid analysis were normal. There was no sign of fungal infection or tuberculosis. The patient's diplopia resolved completely by day 7 of antibiotic therapy; similarly, his extraocular muscle movements were restored. Repeated imaging of the paranasal sinuses showed that the sinusitis had resolved.

Discussion

Acute sinusitis is a common condition associated with significant morbidity. Sphenoid sinusitis in isolation is relatively uncommon and the condition is usually accompanied by pansinusitis.[3] Although acute sinusitis usually responds to antibiotic therapy, occasionally the inflammation may spread to the brain, which is a medical emergency. In order to prevent life-threatening consequences, early recognition of focal neurological deficits such as cranial nerve palsies and prompt referral to the otorhinolaryngologist are imperative. In general practice, cases of acute sinusitis that do not improve with two courses of conventional antibiotic treatment should alert physicians of the possibility of more severe complications. A study by Chee and colleagues found that patients with at least three documented episodes of sinusitis in the previous year had a higher likelihood of immune dysfunction, demonstrating the importance of early referrals in such cases.[4]

The incidence of sixth cranial nerve palsy varies according to age.[5] In young adults, sixth cranial nerve palsies are usually idiopathic or associated with a viral infection or meningitis.[6] The pathophysiology of sixth cranial nerve palsy may be related to a direct irritation of the nerve due to an increase in intracranial

pressure. This may occur as a result of trauma or a space-occupying lesion; hence, the term "false localising" sign. In viral infections of the central nervous system, the immune-complex reaction or the infection can induce an abduction deficit similar to that seen in sixth nerve palsy. The sphenoid sinus lies adjacent to many important structures such as the sixth cranial nerve, the dura mater, the cavernous sinus, and the internal carotid artery.[7] In this case, involvement of the sphenoid sinus may directly irritate the sixth cranial nerve, resulting in an abduction deficit. Although uncommon, cases of abducens nerve palsy in connection with sinusitis have been reported.[8,9]

The diagnosis of sinusitis is often based on clinical findings. However, in refractory or recurrent sinusitis, CT scan or MRI may aid in confirming the diagnosis and exclude potential life threatening complications. Delineating these structures radiographically allows proper evaluation prior to endoscopic surgery.[7]

The symptoms of sinusitis may be non-specific and varied. Headache, nasal congestion, fever, and visual disturbance are the most common presentations but they may occur in isolation, thus making the diagnosis challenging.[8] For instance, although fever occurs in half of the patients infected with sinusitis,[3] our patient presented with chronic frontal headache without fever. Such cases of pansinusitis must be treated with intravenous antibiotics and a combination of different antibiotics is preferred to monotherapy.

The role of steroids in the management of sinusitis is controversial. Additional steroids may aid in reducing inflammation but may also dampen immune response and exacerbate a primary infection. Williamson et al. found that neither antibiotics nor steroid nasal sprays were effective in the treatment of acute maxillary sinusitis.[9] Our patient's symptoms improved dramatically following systemic antibiotics and oral steroid treatment. In this case, the antibiotic therapy was initiated 48 hours prior to the steroid treatment.

Conclusion

Acute sinusitis is a common condition encountered by family physicians. However, the optimal approach to patient management may not always be easy to discern. Refractory cases may require radiological imaging to confirm the diagnosis and identify secondary complications. As reported here, pansinusitis may present as diplopia secondary to a sixth cranial nerve palsy. A combination of high-dose antibiotics with or without a steroid is necessary to treat patients with complicated sinusitis.

References

1. Lindbaek M. Acute sinusitis: guide to selection of antibacterial therapy. *Drugs*. 2002; 64: 805- 19
2. Fagnan LJ. Acute sinusitis: a cost-effective approach to diagnosis and treatment. *Am Fam Physician*. 1998; 58:1795-802,805-6
3. Mubaidin AF, Hairi MA. Sixth nerve palsy and sphenoidal sinusitis. Neurosciences. 2000; 5(3): 174- 6
4. Chee L, Graham SL. Immune dysfunction in refractory sinusitis in a tertiary care setting. *The Laryngoscope*. 2001; 111: 233- 235
5. Patel SV, Mutyala S, Leske DA. Incidence, association, and evaluation of sixth nerve palsy using a population based method. *Ophthalmology*. 2004; 111: 369- 75
6. George B. Peters, Sophie J, Bakri, Greogery. B, Krohel. Cause and prognosis of nontraumatic sixth nerve palsies in young adults. *Ophthalmology*. 2002; 109; 1925-1928
7. Kazkayasi M, Karadeniz Y, Arikan OK. Anatomic variations of sphenoid sinus on comuted tomography. *Rhinology*. 2005; 43: 109- 14
8. Ayberk G, Mehmet Faik Özveren, Timur Yildirim, Karabekir Ercan, Emine Kalkançay, Ayflegül Koçak. Review of a series with abducens nerve palsy. Turkish *Neurosurg*. 2008; 18: 366- 373

9. Jung HJ, Jung MP, Jaehwan K, Soo Jung Lee. Abducens nerve palsy complicated by inferior petrosal sinus septic thrombosis due to mastoiditis. *Korean J Ophthalmol*. 2012 February; 26: 65–68.

10. Zeinreich SJ, Kennedy DW, Rosenbaum AE, Gayler BW, Kumar AJ, Stammberger H. Paranasal sinuses: CT imaging requirement for endoscopic surgery. *Radiology*. 1987; 163: 769- 75

11. Tan HHK, Ong YK. Acute isolated sphenoid sinusitis. *Ann Acad Med*. Singapore 2004; 33: 656-9

12. Williamson IG, Rumsby K, Benge S, Moore M, Smith PW, Cross M, et al. Antibiotics and topical nasal steroid for treatment of acute maxillary sinusitis: a randomized controlled trial. *JAMA*. 2007; 298(21): 2487-96

CASE REPORT

Masked rhinolith: The significance of unilateral symptom

Mohamad I, Arul Arumugam P

Mohamad I, Arul Arumugam P. Masked rhinolith: The significance of unilateral symptom. Malaysian Family Physician 2013;8(1):40-4

Keywords:
nose, symptom, unilateral, rhinolith

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Abstract:

This is a case report of an 11-year old child who was suffering from rhinorrhoea for five years. As there was no history of foreign body insertion into the nose, the diagnosis of a nasal problem was not suspected. Furthermore, the initial presentation of unilateral rhinorrhoea (nasal discharge) masked the suspicion of other pathologies. The child was treated for allergic rhinitis until she presented herself to our attention whereby a rhinoscopy was performed, showing a rhinolith.

Introduction

Nasal problems are commonly encountered in primary care settings. It becomes more challenging to manage nasal problems if the patients are children. It is also difficult to obtain accurate history and perform complete examination. Sometimes symptoms of allergic rhinitis such as rhinorrhoea, nasal block, or even occasional epistaxis can mask the correct diagnosis. Rhinolith is a bony concretion that develops surrounding a nidus in the nasal cavity. Unilateral nasal symptoms are very important in differentiating foreign body or rhinolith from other diagnoses such as allergic rhinitis. A negative history of foreign body should not mask the suspicion of rhinolith. Thus, a patient presenting with unilateral foul smelly nasal discharge should be referred for further evaluation of intranasal pathology such as rhinolith.

Summary

An 11-year-old Malay girl experienced right-sided foul smelly nasal discharge for the past five years. Initially she had occasional right-sided rhinorrhoea and was seen by several general practitioners. There was a history of blood-stained mucus discharge from the right nasal cavity. However, the amount was minimal and self-aborted. The patient denied any history of inserting foreign body into the nose. She was treated for allergic rhinitis for years. However, the symptom did not resolve until she presented to our attention in the ENT clinic.

A whitish brown crust was noted on the floor of the right nasal cavity upon anterior rhinoscopy examination. It was gritty on probing with Jobson Horn instrument. Cold spatula test revealed good airflow from both nostrils. Oropharynx appearance was normal. There was no paranasal sinus tenderness.

Rhinolith was clinically diagnosed. She was taken for examination under anaesthesia. Intra-operatively, the mass was found to be concretion of stone located on the floor of the right nasal cavity. Rhinolith was completely removed. The nasal cavity was washed until no residual stone was seen. She was successfully extubated and nursed in a ward for one day before discharge. Next, the rhinolith was examined. It was crushed and blood clot was found at the centre.

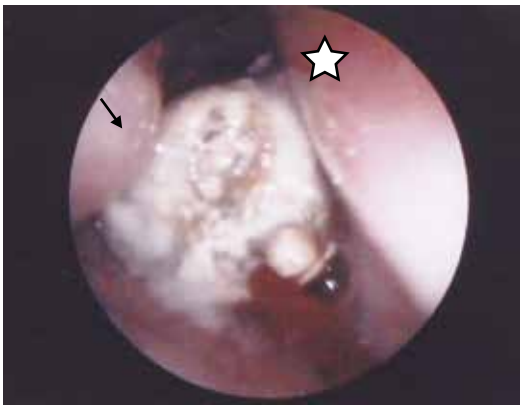

Figure 1.
White mass on the floor of the right nasal cavity with gritty sensation on probing (arrow = right inferior turbinate; star = nasal septum)

Discussion

Although nasoendoscopic examination may be difficult in uncooperative children, the history of unilaterality of nasal symptoms should be regarded as the strong diagnosis of rhinolith. The symptoms that strongly indicate the diagnosis of rhinolith include unilateral foul smelly nasal discharge, even without positive history of foreign body insertion into the nose. If the lesion is expanding, pain in the nose and epistaxis can be the presenting symptoms, indicating the pressure effect. Sometimes a superimposed infection can take place, owing to disruption of normal nasal discharge passageway. The symptoms may have some psychological effect on patients, especially children.

In most of the cases, children would not be able into reveal the history of foreign body insertion to the nose, especially those who are left unsupervised. Radiological assessment is rarely needed; however, the diagnosis of rhinolith may be revealed through routine imaging conducted for other reasons, such as dental treatment.[1,2] The incidence of rhinolith is very low, which accounts for 1 in 10,000 otolaryngology patients,[3] or one new case per year.[4] Owing to its rarity, rhinolith can be easily overlooked and confused with infections or obstruction of upper airways.[5] This scenario was the most likely reason of delayed diagnosis of rhinolith in this patient.

It is not uncommon for the nidus of a rhinolith to be endogenous in origin. In this case, the nidus was a blood clot. Desiccated blood clots, ectopic teeth, and bone fragments are examples of common endogenous causes.[1] Nasal mucus itself or any bony fragment can be the centre of concretion. A deciduous tooth that migrated to the floor of the nasal cavity was reported to be one of the endogenous nidus for rhinolith in an adult patient.[6] Exogenous nidus includes foreign bodies that enter the nasal cavity either intentionally, which is more common in children, or accidentally, for example during road traffic accident.

Intra-operative findings of the removed concretion would confirm the diagnosis of a rhinolith. The foreign body, if present, would be readily identified by crushing the covering calcifications. Usually the inert foreign body is found because such type of material can be left longer in the cavity without producing any symptom. This is why the medical history of a rhinolith may range from months to decades.[2] When the concretion is formed, it will obstruct the nasal passage. The symptoms of infection may prevail due to stasis of nasal secretion, which in turn will promote bacterial colonization. Nasal vestibulitis and sinusitis are common complications of infection in rhinolith cases.[3] Organic foreign bodies such as peanuts, seeds, and vegetables tend to show symptoms at an early stage, owing to the property of inducing inflammation to the surrounding structures.

Conclusion

Any child who presents with unilateral foul smelling nasal discharge has to be treated with suspicion and these patients need early referral to ENT specialist if symptoms persist. Even in cases in which patients were treated for allergic rhinitis and did not show any improvement or control with medications, an ENT referral may be needed to establish the diagnosis and to rule out other intranasal problems.

References

1. Shah FA, George S, Reghunanden N. A case presentation of a large rhinolith. Oman Med J 2010; 25(3):230–1.
2. Orhan K, Kocyigit D, Kisnisci R et al. Rhinolithiasis: An uncommon entity of the nasal cavity. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2006;101(2):e28–32.
3. Sinha V, Rane A, Radzan U et al. Rhinolith. Surgical Journal of North India 1995;11(1):81-2. Secondary reference
4. Polson CJ. On rhinoliths. J Laryngol Otol 1943;58:79-116.
5. Yuca K, Caksen H, Etlik O et al. The importance of rigid nasal endoscopy in the diagnosis and treatment of rhinolithiasis. Auris Nasus Larynx 2006;33(1):19-22.
6. Irfan M, Ramiza R, Roselinda A. Deciduous canine presented as a rhinolith in an adult. The Internet Journal of Head and Neck Surgery 2008;2(2). http://www.ispub.com/journal/the-internet-journal-of-head-and-neck-surgery/volume-2-number-2/deciduous-canine-presented-as-a-rhinolith-in-an-adult.html.

CASE REPORT

The 'widow maker': Electrocardiogram features that should not be missed

Yusuf Muharam M, Ahmad R, Harmy MY

Yusuf Muharam M, Ahmad R, Harmy MY. The 'widow maker': Electrocardiogram features that should not be missed. Malaysian Family Physician 2013;8(1):45-7

Keywords:
Wellen's syndrome, widow maker, myocardial infarction

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Abstract

Patients with Wellen's syndrome often present with chest pain and found to have specific precordial T-wave changes on the electrocardiogram (ECG). They subsequently develop a large anterior wall myocardial infarction. These specific electrocardiographic abnormalities are associated with critical stenosis of the proximal left anterior descending coronary artery (LAD). This syndrome is often under-recognised and has fatal consequences; it is, therefore, also known as the widow maker. We highlight a case of a 39-year old gentleman who had a history of coronary artery disease and typical ECG characteristics of Wellen's syndrome.

Introduction

Wellen's syndrome occurs in a group of patients who have unstable angina presenting with chest pain and specific precordial T-wave changes. They are at risk of developing a large anterior wall myocardial infarction[1]. In most patients with Wellen's syndrome, the cardiac enzymes are not elevated.[2]

Recognising these ECG abnormalities is crucial because they signal a preinfarction stage of underlying coronary artery disease, which, if left untreated, often progresses to an anterior myocardial wall infarction. Previous studies have shown that the development of anterior myocardial infarction is rapid upon the onset of Wellen's syndrome.[1] Unfortunately, medical management alone is not enough to halt the progression of this disease. Hence, Wellen's syndrome is also known as the "widow maker".

This case report describes a patient with Wellen's syndrome. In view of the urgency of treating this syndrome and the potential fatality, it is important that frontline doctors, such as family and emergency physicians, recognise these and the ECG pattern when evaluating patients presenting with chest pain. Wellen's' syndrome and its characteristics, the criteria for diagnosis, and a discussion of its implications and medical management will be presented.

Case Report

A 39-year old Malay man presented to our ED with frequent chest pain of several weeks. He experienced chest pain while doing light work; sometimes the pain occurred even while he was resting. The patient had a past medical history of coronary artery disease (CAD), hypertension, and hyperlipidaemia which he received regular treatment. His previous ECG approximately done 3 months earlier showed a sinus rhythm, 78 beat per minute, normal axis with biphasic T wave at lead V1-V2. At lead aVL, V3 and V4, the T waves were inverted and symmetrical. He underwent exercise stress test (EST) a week later but the result was inconclusive as he was unable to complete the test due to lethargy. He was

asked to undergo dobutamine stress test two months later but he didn't turn up.

During the physical examination, he was not experiencing chest pain. His vital signs and cardiovascular examination were normal. The ECG did not show significant changes (Figure 1) and the troponin T level was normal. The emergency physician diagnosed him to have Wellen's syndrome and was admitted to the ward. He refused angioplasty and further intervention due to financial constraint.

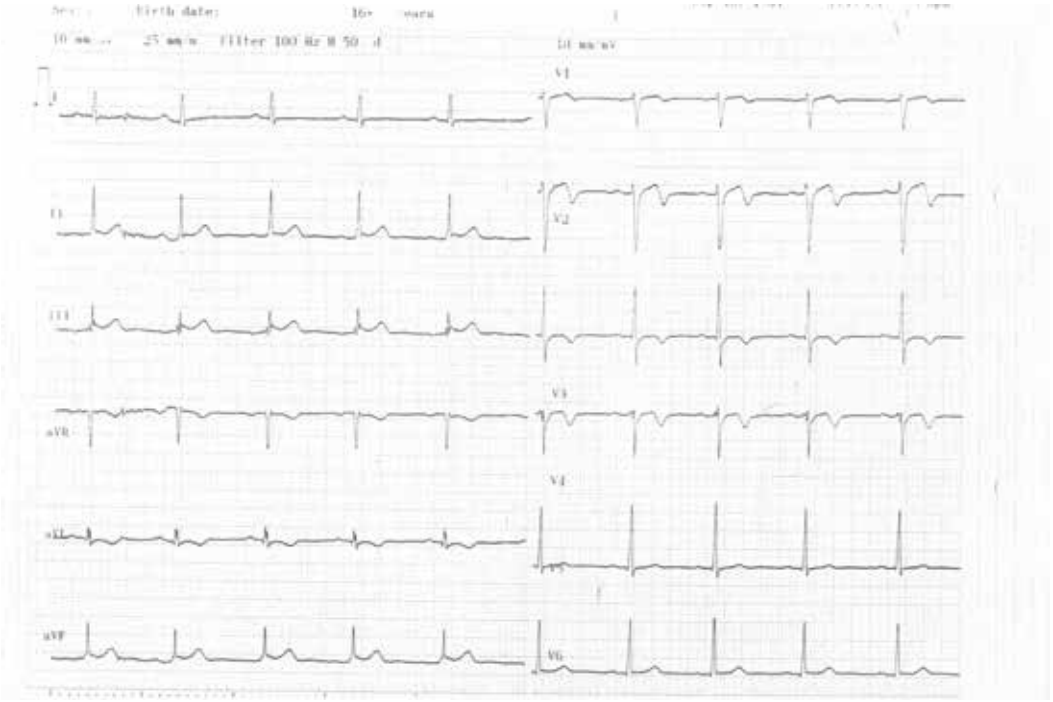

Figure 1.
Showing the ECG abnormalities during admission (at rest and pain free)

Discussion

In 1982, Wellen and his colleagues first described a characteristic ECG pattern of T waves in the precordial leads that were associated with a critical stenosis of the proximal left anterior descending coronary artery.[1] In Wellen's syndrome, T-wave changes usually occur during a pain-free interval when other evidence of ischaemia or unstable angina may be absent. Although these patients may initially respond well to medical treatment, they have poor prognosis with conservative therapy and often require aggressive treatment such as angioplasty or coronary artery bypass graft. The characteristics of Wellen's syndrome include:[2]

1) Recent history of chest pain
2) Little or no elevation of cardiac enzymes
3) Symmetric, deep T wave or biphasic T wave in V2-V5 or V6 during pain free period and
4) No precordial Q waves or loss of R waves
5) Minimal (<1mm) ST elevations

In Wellen's syndrome, a patient often presents with intermittent chest pain and there is a characteristic T-wave on the ECG during a pain-free period. It represents a critical stenosis of the LAD, a branch of left coronary artery that, if progressed to an occlusion, may result in an acute anterior wall myocardial infarction. The patient requires urgent angioplasty to reopen the occlusion.[3] The LAD supplies the anterior wall of the heart, including both ventricles, as well as the septum. An occlusion in this vessel can result in serious ventricular dysfunction, thus placing the patient at risk of congestive heart failure and death. In Wellen's syndrome, the patients may not present with unstable angina; some may have symptoms mimicking chronic stable angina.

Majority (76%) of the patients with Wellen's syndrome have typical ECG (type I) features showing deep, symmetrical T-wave inversions in precordial leads V2 and V3. It often involves leads V1 and V4 and occasionally leads V5 and V6.[4,5] One third of Wellen's syndrome presents with biphasic T waves in leads V2 and V3 (type II).[4]

The diagnosis is difficult as most patients with Wellen's syndrome do not have chest pain during the visit, have normal or minimally elevated cardiac enzymes and "non-specific" ECG findings.[6]

The patient in this case report had typical type II ECG features suggestive of Wellen's syndrome and they were recorded while the patient was resting and pain free. The patient was asked to undergo EST to establish the diagnosis but, fortunately, the procedure was abandoned due to his poor effort tolerance. Tandy and colleagues4 reported a patient of Wellen's syndrome who, after undergoing an EST, developed an ST-elevation anterior myocardial infarction resulting in death. His death was attributed to cardiogenic shock and arrhythmia despite early administration of fibrinolytic therapy.

The ECG features of Wellen's syndrome show sensitivity, specificity and positive predictive value of 69%, 89% and 86% respectively.1 Urgent angiography is the investigation of choice and it helps to determine the extent of the disease and assist the cardiologist in making decisions whether the patient will need percutaneous coronary intervention, coronary artery bypass graft, or medical management.[4,8]

Summary

The ECG characteristic of Wellen's syndrome is highly specific for LAD stenosis. Primary care physicians should not focus solely on the ST segment in ECG interpretation of ischemia, but also take into account any T wave changes in a patient with chest pain and history of coronary arterty disease. It is, therefore, important to compare current and previous ECGs as this might provide clues to the diagnosis. Referral for EST or dobutamine stress test is contraindicated in Wellen's syndrome as they precipitate an acute myocardial infarction. The recommended treatment for patients with Wellen's syndrome is early intervention with either angioplasty or coronary artery bypass surgery.[7]

References

1. 1. De Zwaan C, Bar FW, Janssen JH, et al. Angiographic and clinical characteristics of patients with unstable angina showing an ECG pattern indicating critical narrowing of the proximal LAD coronary artery. *Am Heart J*. Mar 1989; 117(3):657-65.
2. Nicole E Mead, Keally P O'Keefe. Wellen's Syndrome: An ominous EKG pattern. *Journal of Emergencies, Trauma and Shock*. Sept-Dec 2009; 2(3): 206-208.
3. Moore KL, Dalley AF. Thorax. In: *Clinically Oriented Anatomy*. 4th ed. Baltimore, Maryland: Lippincott Williams & Wilkins; 1999:135.
4. Tandy TK, Bottomy DP, Lewis JG. Wellen's' syndrome. *Ann Emerg Med*. Mar 1999;33(3):347-51
5. Aufderheide TP, Gibler WB. Acute ischemic coronary syndromes. In: Rosen P, Barkin R, eds. Emergency medicine: concepts and clinical practice, 4th edn. St Louis: Mosby–Year Book; 1998:1688–91.
6. Haines DE, Raabe DS, Gundel WD, Wackers T. Anatomic and prognostic significance of new T-wave inversion in unstable angina. *Am J Cardiol*. 1983; 52:14–8.
7. John R. Kapoor et all. Isolated Disease of the Proximal Left Anterior Descending Artery; Comparing the Effectiveness of Percutaneous Coronary Interventions and Coronary Artery Bypass Surgery, J Am Coll Cardiol Intv. 2008; 1(5): 483-491
8. Tatli E, Aktoz M, Buyuklu M, Altun A. Wellen's' syndrome: the lectrocardiographic finding that is seen as unimportant. *Cardiol J*. 2009;16(1):73-5

Scales on the scalp

Jamil A, Muthupalaniappen L

Jamil A, Muthupalaniappen L. Scales on the scalp. Malaysian Family Physician 2013;8(1):48-9

Keywords:
pityriasis amiantacea, psoriasis, tinea capitis, seborrhoeic dermatitis.

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Case History

A five-year-old boy presented with a six-week history of scales, flaking and crusting of the scalp. He had mild pruritus but no pain. He did not have a history of atopy and there were no pets at home. Examination of the scalp showed thick, yellowish dry crusts on the vertex and parietal areas and the hair was adhered to the scalp in clumps. There was non-scarring alopecia and mild erythema (Figure 1 & 2). There was no cervical or occipital lymphadenopathy. The patient's nails and skin in other parts of the body were normal.

Question

1. What is the most likely diagnosis?
2. What are the associated conditions?
3. What investigations are indicated?
4. What is the treatment for this condition?

Answer

1. Tinea amiantacea.
2. Scalp psoriasis, seborrhoeic dermatitis, tinea capitis, pyogenic infections and lichen planus.
3. Wood's lamp examination, potassium hydroxide examination and culture of hair with crust to exclude fungal infection.
4. Keratolytics for isolated tinea amiantacea, topical steroids in patients with associated psoriasis or eczema.

Discussion

Pityriasis amiantacea (PA), also known as tinea amiantacea, is a papulosquamous disorder found on the sebum-rich areas of the scalp. Its exact aetiology is unknown but it is believed to be a reaction to an underlying inflammatory disease. Pityriasis amiantacea presents as tenaciously adherent scales surrounding the base of scalp hairs and it can result in hair loss. It occurs more commonly among children than adults. It can be an isolated condition or associated with other dermatological diseases such as psoriasis, seborrhoeic dermatitis, tinea capitis, pyogenic infections, atopic eczema, alopecia areata and lichen planus.[1] The silvery or yellowish scales are thick and asbestos-like. They encircle the hair shafts and may bind down tufts of hair. Reversible alopecia may occur.

Psoriasis and seborrhoeic dermatitis are the most common diseases associated with tinea amiantacea. Psoriasis and seborrhoeic dermatitis are characterised by scales attaching in layers to the hair shaft but the hair does not become matted. The skin and nails should be examined for presence of other dermatologic

conditions. Nail pitting, however, is not a useful diagnostic sign as it is commonly seen in psoriasis, alopecia areata, lichen planus and eczema.[3] Wood's lamp examination should be performed to exclude tinea capitis. Potassium hydroxide examination and fungal culture of the scales and plucked hairs are also useful to diagnose fungal infections of the skin.

Pityriasis amiantacea can be treated effectively by using keratolytic agents, such as salicylic acid and coal tar. Keratolytic agents help to remove thick scales and enhance penetration of topical steroid.[2] Topical steroid is effective for associated psoriasis or eczema as it reduces inflammation and pruritus. Topical antifungal agent such as ketoconazole shampoo is useful in treating seborrhoeic dermatitis while oral antifungal is recommended only for confirmed cases of tinea capitis. Antibiotics may be prescribed if Staphylococcus superinfection is suspected.[1] Infliximab, an anti tumor necrosis factor-alpha (TNF-α) inhibitor, has been found to be effective in treating recalcitrant tinea amiantacea associated with psoriasis.[4]

References

1. Abdel-Hamid IA, Aghra SA, Moustafa YM, et al. Pityriasis amiantacea: a clinical and etiopathologic study of 85 patients. Int J Dermatol. 2003; 42(4); 260-4.
2. Bettencourt MS, Olsen EA. Pityriasis amiantacea: a report of two cases in adults. Cutis. 1999; 64(3): 187-9.
3. Jadhay VM, Mahajan PM, Mhaske CB. Nail pitting and onycholysis. Indian J Dermatol Venereol Leprol. 2009; 75: 631-3.
4. Pham RK, Chan SC, Hsu S. Treatment of pityriasis amiantacea with infliximab. Dermatology Online Journal. 2005; 15(12):13.

An adult patient with double vision

Koh KC

Koh KC. An adult patient with double vision. Malaysian Family Physician 2013;8(1):50-52

Keywords:
diplopia, headache, sinusitis, sixth nerve palsy

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Case History:

A 27-year old Nepali man presented with a four-day history of fever, vomiting and horizontal diplopia. There was no history of trauma. The photographs below show the patient looking at the distance (Figure 1) and to the left (Figure 2).

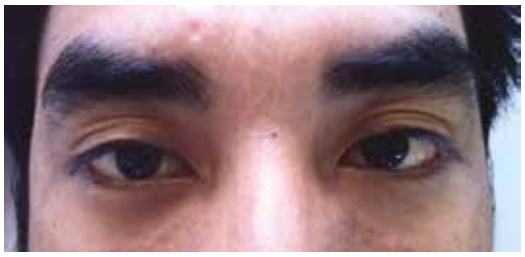

Figure 1.

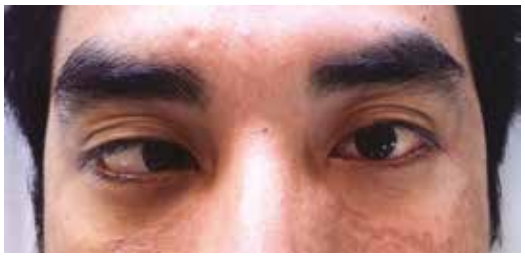

Figure 2.

Question

1. State the abnormality.
2. What is the diagnosis?
3. What are the possible causes?

Answer

1. Incomitant esotropia
2. Left 6th cranial nerve palsy
3. Mastoiditis, otitis media, sinusitis, and cellulitis

Discussion

Esotropia

Figure 1 shows that the patient has esotropia of the left eye or what is commonly known as a squint or strabismus. The squint is an inward squint (synonyms include convergent squint or esodeviation of the eye). Esotropia is a condition where either one or both eyes are turned inward. Congenital esotropia, often seen in infants below six years old, may give rise to amblyopia. Accommodative esotropia is common among patients with moderate amounts of hypermetropia or hyperopia. Esotropias can be concomitant, where the degree of deviation is independent of the direction of the gaze, or incomitant, where the degree of deviation is influenced by the direction of the gaze. This patient had incomitant esotropia as the squint was revealed when he was asked to look to the left (Figure 2). A comprehensive step-by-step approach to a patient presenting with a squint has been described extensively in literature.[1]

When the patient looked to the left, there was a loss of conjugate eye movement. The right eye turned to the left, indicating a functional medial rectus muscle (supplied by the third cranial nerve or oculomotor nerve). However, the left eye remained fixed indicating left lateral rectus palsy (supplied by the sixth cranial nerve or abducens nerve), leading to horizontal diplopia.

Neuroanatomy of the abducens nerve

The abducens nerve, on each side, arises in the pons in close proximity to the floor of the fourth ventricle and exits the brain stem at the pontomedullary sulcus. It then ascends superiorly towards the cavernous sinus before traversing it and entering the orbit via the superior orbital fissure. It terminates at the ocular surface of the ipsilateral lateral rectus muscle.[2,3] It is responsible for lateral horizontal ocular movement.

The abducens nerve has the distinction of having the longest subarachnoid course of all cranial nerves and by virtue of this, is also vulnerable to many possible insults along its course. In addition, unlike the oculomotor nerve, the abducens nerve passes through the cavernous sinus proper instead of being embedded within the dura of the cavernous sinus' wall. Due to its unique position, the abducens nerve is also the most vulnerable to diseases affecting the cavernous sinus compared with the other nerves innervating extraocular muscles.[3]

Clinical findings and causes of isolated sixth cranial nerve palsy

Patients with solitary abducens nerve palsy present with binocular horizontal diplopia (double images located side-by-side horizontally) and esotropia on primary gaze. In addition, the patient may complain of headache or may turn his or her head to one side in order to minimise the discomfort caused by diplopia.

There are many causes of isolated ipsilateral abducens nerve palsy. Raised intracranial pressure from any cause should be ruled out, particularly in young patients presenting with symptoms such as headache, vomiting, blurred vision and altered consciousness. The elevated intracranial pressure causes the brain stem to displace inferiorly and stretches the abducens nerve. Lesions involving the subarachnoid space (for example tumours, infection, bleeding, inflammation and cavernous sinus lesions) may cause abducens nerve palsy. Congenital causes are rare. Systemic diseases such as diabetes mellitus and hypertension are common causes of solitary sixth cranial nerve palsy.[4] A study in Nepal involving 44 men with isolated sixth cranial nerve palsy found that 56.8% of the cases are idiopathic (most likely viral infection), followed by uncontrolled diabetes mellitus.[5]

Laboratory investigations found that the patient had leucocytosis. A contrast-enhanced computed tomography (CECT) revealed thrombosis of the superior sagittal sinus, the left transverse sinus and the left sigmoid sinus. There was no evidence of leptomeningeal enhancement, space-occupying lesions or mass effect. This suggests that an infective process causing the thrombosis is the likely cause of the isolated sixth nerve palsy. Possible causes of infections causing thrombosis in the various cerebral venous sinuses in this patient include infective spread from nearby structures such as mastoiditis, otitis media, sinusitis, and cellulitis. More than 100 causes of cerebral venous sinus thrombosis have been extensively described in literature. However, in 20-25% of cases, no cause could be identified despite extensive investigation.[6] The patient was treated with antibiotics to cover possible infection and anticoagulant while awaiting investigations to rule out hypercoagulable conditions.

References

1. Rutstein RP, Cogen MS, Cotter, SA, et al. Optometric clinical practice guideline care of the patient with strabismus: Esotropia and Exotropia. Lindbergh Blvd. St. Louis: American Optometric Association; 2011.
2. Evans NM. Ophthalmology. 2nd ed. Oxford University Press Inc; 1995.
3. Depper MH, Truwitt CL, Dreisbach JN, et al. Isolated Abducent Nerve Palsy: MRI Imaging Findings. Am J Roent.1993;160:837-41.
4. Savino NJ, Hilliker JK, Casell

GH. Chronic sicth nerve palsies. Are they really harbingers of serious intracranial disease? Arch Ophthalmol. 1982;100:1442-4.

5. Shakya S, Agrawal JP, Ray P. Profile of isolated sixth cranial nerve palsy: A hospital based study. J Neuroscience. 2004;1:32-5.

6. Kimber J. Cerebral venous sinus thrombosis. Q J Med. 2002;95:137-

Sudden-onset of hearing loss after a slap

Jaafar R, Mohamad I

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Case History

A 57-year old woman presented with acute bleeding from the left ear associated with reduced hearing and tinnitus. She also complained of redness and discomfort of her left eye; but there was no visual loss. A day before, she was slapped on the left side of her face. Previously, she did not have any hearing or visual problem.

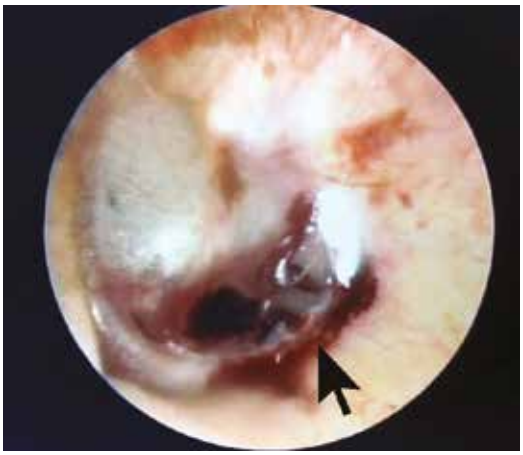

Figure 1.
The patient's left tympanic membrane.

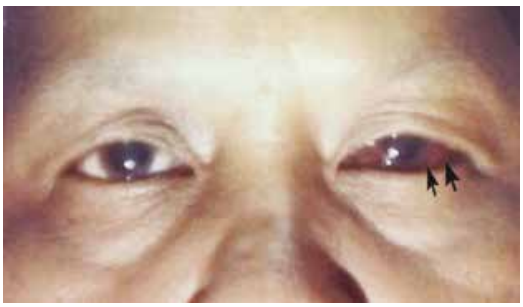

Figure 4a.
The patient's left eye showing redness.

Question

1. What are the abnormalities in the left ear (Figure 1) and the left eye (Figure 2)?
2. What additional ear examinations are required?
3. What is the outcome of this type of ear injury?

Answer

1. Left ear otoscopy revealed a perforated tympanic membrane postero-inferiorly with ragged edges. There was minimal blood clot noted with no active bleeding (Figure 1). Examination of left eye showed chemosis and conjunctival hemorrhage (Figure 2). Tympanic membrane perforations resulting from direct trauma tend to have ragged edges, while a hard slap usually results in a triangular or linear tear of the tympanic membrane.[1] The most common site of perforation is posterior.[2]

   Traumatic tympanic membrane perforation due to domestic violence is on the rise.[1-4] As most assailants are right handed, the left ear

is more frequently affected.[2, 3] Majority of the victims suffer from sudden hearing loss, tinnitus, aural fullness, temporal bone and maxillofacial fractures.[1, 4] As high as eight percent of the victims of domestic violence sustain temporal bone fractures.[5]

2. A complete bilateral ear examination and hearing assessment should be performed and documented. In this case, the right auricle, external ear canal and tympanic membrane appeared normal. Tuning fork test showed mild left conductive hearing loss, as evidenced by positive Rinne's test on both sides and Weber test lateralised to the left ear. This simple test can be done in a primary setting to exclude any sensorineural hearing loss, which requires early referral.

   An audiometry test is essential in traumatic ear injury. In tympanic membrane perforation, a conductive hearing loss is common but the severity varies and is often not more than 30 dB.[3, 4] Damage to the ossicular attachment at the posterior-inferior part of the tympanic membrane may result in conductive hearing loss, which affects the range 7-20 dB with mean of 13.2 dB.[1, 3, 4] If sensorineural hearing loss is diagnosed in the affected ear, an inner ear involvement must be considered.

3. A temporary ipsilateral conductive hearing loss is expected. The patient should be referred to an otorhinolaryngologist for assessment and treatment. A pure tone audiogram is important to confirm the hearing status. In traumatic tympanic membrane perforation, there is a high spontaneous healing rate (80%) with conservative management.[2, 4] However, if the inner ear is involved, the hearing loss is more likely to be permanent.[5]

References

1. Afolabi OA, Aremu SK, Alabi BS et al. Traumatic tympanic membrane perforation: an aetiological profile. *BMC Res Notes*. 2009;2:232.
2. Al-Obiedi SH. Spontaneous healing oftraumatic perforations of tympanic membrane. *Ann Coll Med Mosul*. 2009;35(1):26-32.
3. Chukuezi AB, Nwosu JN. Ear trauma in Orlu, Nigeria: A Five-Year Review. *Indian J Otolaryngol Head Neck Surg*. 2012;64(1):42-45.
4. Lou ZC, Lou ZH, Zhang QP. Traumatic tympanic membrane perforations: a study of etiology and factors affecting outcome. *Am J Otolaryngol*. 2012;33(5):549-55.
5. Singh G, Singh B, Singh D. Prospective Study of 'Otological Injury Secondary to Head Trauma'. Indian J Otolaryngol Head Neck Surg. 2011. doi:10.1007/s12070-011-0404-6

Research Handbook: A guide for novice researchers

By the Malaysian Primary Care Research Group (MPCRG) 130 pages, Kuala Lumpur: The Academy of Family Physicians of Malaysia (AFPM), 2012. ISBN: 978-983-43922-1-5

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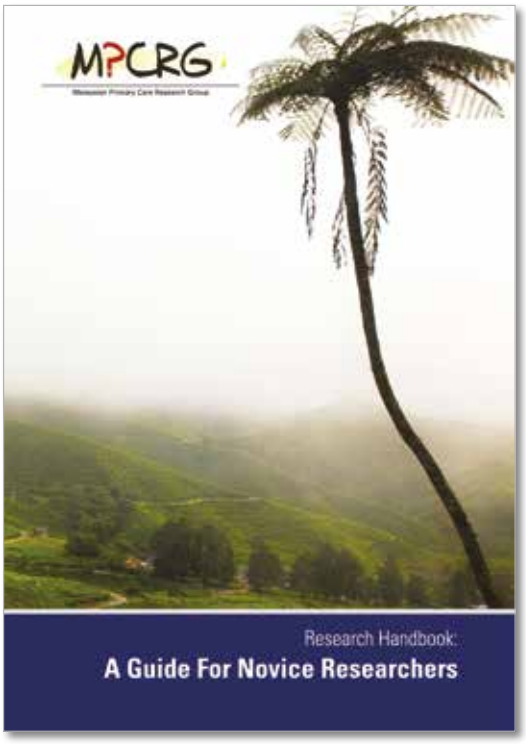

Novice researchers are often unaware of the research process and, more importantly, the principles and ethics behind research and publications. The Research Handbook: A Guide For Novice Researchers represents the experiences of the Malaysian Primary Care Research Group (MPCRG), which consists of experienced primary care researchers and clinicians in Malaysia. This practical handbook covers a wide ranging topics that are particularly relevant to novice researchers who are embarking on their first few research projects. Although the handbook was developed by the primary care researchers, the content is suitable for researchers from all disciplines.

Each chapter of the handbook has been written by one or more experienced primary care researchers; some authors have written their chapters with a Malaysian flavour taking into consideration our diverse languages and cultures.

Both quantitative and qualitative methodologies are covered, with a little more emphasis on quantitative research. The handbook also covers topics that are often challenging for novice researchers: defining the purpose of the research, developing research questions and objectives, conducting systematic literature review and preparing a research proposal. In addition, research designs and their interconnectedness with specific research questions, survey questionnaires and pilot studies are included. The handbook also includes chapters on on how to present the research findings (texts, tables and graphs) and writing them up for publication in academic journals. The chapter on ethics will be especially useful for researchers to understand the importance of respecting patient autonomy and rights in research.

This research handbook is a good effort put in by the MPCRG and it should be a key reference guide for novice researchers embarking on health research.

* This book can be purchased online at the MPCRG website: www.mpcrg.net or contact the Academy of Family Physicians of Malaysia at email: afpm@po.jaring.my or telephone: 03 40251900.

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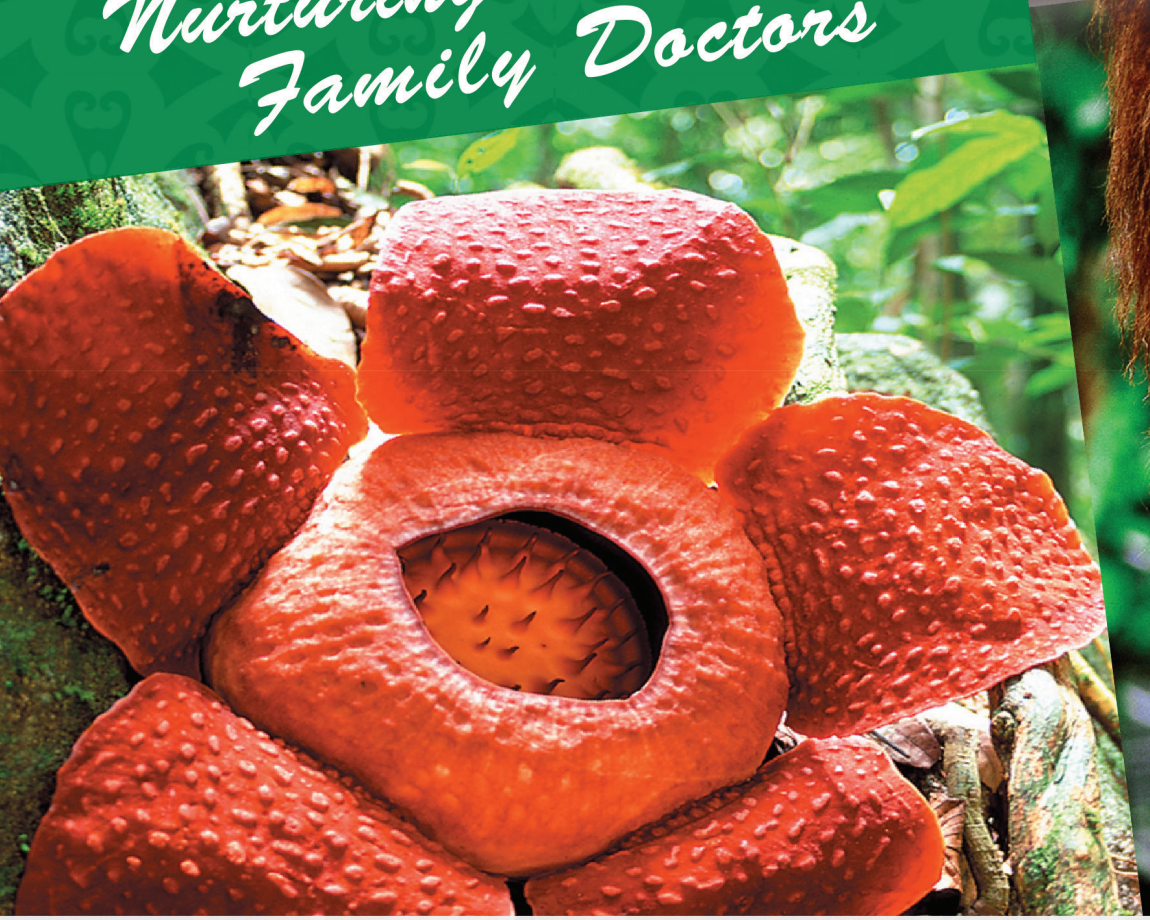

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