The coexistence of anxiety and depressive personality traits in migraine
Tan H J, Suganthi C, Dhachayani S, Mohd Rizal A M, Raymond A A

ABSTRACT
Introduction: Migraine is associated with a variety of personality traits. The objective of this study was to reevaluate the personality traits using Minnesota Multiphasic Personality Inventory-2 (MMPI-2) in migraine patients diagnosed by applying the new International Classification of Headache Disorders-2 criteria.

Methods: This was a case control study involving 70 migraine patients and 70 age- and gender-matched controls. The personality traits in the two groups were analysed using the MMPI. Data was analysed using the chi-square test.

Results: The migraine patients showed a higher MMPI score on the following personality traits: depression (39 versus 15, p-value is less than 0.0005), and anxiety (24 versus 11, p-value equals 0.011). Both depressive and anxiety personality traits were significantly higher in migraine patients.

Conclusion: All migraine patients should probably be screened for their personality traits and psychopathology using the MMPI.

Keywords: anxiety, depressive traits, migraine, personality traits, psychopathology

INTRODUCTION
Migraine is a common, debilitating disorder that imposes a large personal burden on sufferers and high economic costs on society. The one-year prevalence of migraine was quoted to be 14.7%. Population-based studies have consistently shown that about 5% of men and 15%-17% of women suffer migraine attacks.1,2 The prevalence rate in Malaysia is close to that found in Western countries, which is about 9%.3 Lipton and Stewart have reported that the majority of migraineurs experience partial or total disability during an attack.4 Various disorders like panic disorder and depression have been associated with migraine. The coexistence of comorbid conditions lead to further disability of migraine sufferers in all aspects of their daily lives, including employment, household work and non-work activities. Under-recognition of the associated conditions in migraine leads to poor response to treatment. We undertook this study to determine the association between certain personality traits and migraine.

METHODS
This was a case control study involving 70 migraine patients who fulfilled the International Classification of Headache Disorders-2 20045 (ICHD-2) and 70 age-, gender- and race-matched controls. The ICHD-2 (Table I) tabulates the criteria for headache classification and diagnosis. This allows a systematic approach to a range of disorders that present with headache. The revised criteria are essential both to good clinical management and to useful research. The subjects were requested to answer the Minnesota Multiphasic Personality Inventory-2 (MMPI-2)6 questionnaire which consists of 567 questions with true or false options. The MMPI-2 is a written psychological assessment used to diagnose personality and psychological disorders. The personality scales scored in the MMPI-2 will determine a specific personality trait. The MMPI-2 was assessed by a psychologist to determine the presence of depressive and anxiety personality traits. Statistical analysis was done by chi-square test using the Statistical Package for Social Sciences version 11.0 software (SPSS Inc, Chicago, IL, USA) and a p-value of less than 0.05 was deemed statistically significant.

RESULTS
The median age was 30 years (interquartile range 24–40) in the migraine group and 31 years (interquartile range 23–39) in the control group (Table II). Out of the 70 patients, 63 (90%) had migraine with aura. There were 27 (38.6%) patients who had a family history of migraine. 38 (54.3%) patients had migraine for more than ten years. The duration of migraine was obtained from the patient’s history. The duration of migraine did not differ significantly between the two genders. Migraine with aura
DISCUSSION

Migraine is a heterogeneous disorder characterized by attacks of headache that vary in frequency, duration, severity and symptomatology. Previous studies had used the International Headache Society (IHS) criteria from 1988. There have been limited publications on the new ICHD-2 published in 2004. In contrast to the IHS criteria, the ICHD-2 provides a more comprehensive identification of migraine patients. The criteria for migraine with and without aura are shown in Table I. It also includes criteria for chronic migraine, new daily persistent headache and hemicrania continua. Previous reports on the comorbidity in migraine may be over or under represented. Applying the new ICHD-2 diagnostic criteria, we were able to reevaluate the associated personality traits in migraine patients.

The literature on personality characteristics and headache still poses considerable discrepancies, with regard to both the eventual pathogenic role of personality characteristics and the possible association between certain personality traits and migraine. Wolff proposed the definition of “migraine personality”, noting a characteristic set of psychological features that was found among adult migraine sufferers. The relationship between migraine and psychopathology has been discussed more often than it has been systematically studied. More recent population-based studies have demonstrated associations...
between migraine and depression and migraine with panic disorder. The association of personality traits and migraine was bi-directional.\(^6,10\)

In our study, migraine patients showed significantly higher scores than controls on different personality traits. This may be attributed to the purer study population using the revised ICHD diagnostic criteria. Females were found to be more anxious compared to their male counterparts. Many previous studies analysed personality traits associated with headache of any form, and very few studies on their association with migraine. The association between migraine, anxiety and depression is strong both in clinical and community samples, suggesting a bi-directional influence between them. The association between depressive personality trait and migraine support a bi-directional influence with one increasing first onset of the other.\(^11,12\) The depressive trait in persons with migraine is a psychological response to disabling migraine attacks, and vice versa. Our analysis on anxiety and depression showed a significant association with migraine. A study by Breslau et al also supports the evidence that the association between migraine and major

Table II. Baseline characteristics of migraine patients and their controls.

<table>
<thead>
<tr>
<th></th>
<th>Migraine n = 70 (%)</th>
<th>Control n = 70 (%)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median</td>
<td>30</td>
<td>31</td>
<td>NS</td>
</tr>
<tr>
<td>IQR</td>
<td>24-40</td>
<td>23-39</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Females</td>
<td>59 (84.3)</td>
<td>59 (84.3)</td>
<td>NS</td>
</tr>
<tr>
<td>Males</td>
<td>11 (15.7)</td>
<td>11 (15.7)</td>
<td></td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Malay</td>
<td>55 (78.6)</td>
<td>55 (78.6)</td>
<td>NS</td>
</tr>
<tr>
<td>Chinese</td>
<td>7 (10)</td>
<td>7 (10)</td>
<td></td>
</tr>
<tr>
<td>Indian</td>
<td>8 (11.4)</td>
<td>8 (11.4)</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary</td>
<td>2 (2.9)</td>
<td>0 (2.9)</td>
<td>NS</td>
</tr>
<tr>
<td>Secondary</td>
<td>24 (34.3)</td>
<td>16 (22.9)</td>
<td></td>
</tr>
<tr>
<td>Tertiary</td>
<td>44 (62.9)</td>
<td>54 (77.1)</td>
<td></td>
</tr>
</tbody>
</table>

\(^*\) significant at \(p < 0.05\); IQR: interquartile range; NS: not significant

Table III. Comparison of migraine with aura and anxiety trait between genders.

<table>
<thead>
<tr>
<th></th>
<th>Male (n)</th>
<th>Female (n)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Migraine with aura</td>
<td>6</td>
<td>57</td>
<td>&lt; 0.0005(^*)</td>
</tr>
<tr>
<td>Anxiety trait</td>
<td>7</td>
<td>17</td>
<td>0.025(^*)</td>
</tr>
</tbody>
</table>

\(^*\) significant at \(p < 0.05\)

Table IV. Comparison between depressive and anxiety traits in migraine and control groups.

<table>
<thead>
<tr>
<th></th>
<th>Migraine n = 70 (%)</th>
<th>Control n = 70 (%)</th>
<th>p-value</th>
<th>OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depressive trait</td>
<td>39 (55.7)</td>
<td>15 (21.4)</td>
<td>&lt; 0.0005(^*)</td>
<td>4.61 (2.07-10.39)</td>
</tr>
<tr>
<td>Anxiety trait</td>
<td>24 (34.4)</td>
<td>11 (16.0)</td>
<td>0.011(^*)</td>
<td>2.80 (1.16-6.83)</td>
</tr>
</tbody>
</table>

\(^*\) significant at \(p < 0.05\); OR: odds-ratio; CI: confidence interval

Table V. Abbreviated International Headache Society criteria for common primary headache (1988).

<table>
<thead>
<tr>
<th>Migraine without aura</th>
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<tbody>
<tr>
<td>Headache lasting four hours to three days</td>
<td>Nausea/vomiting and/or light and noise sensitivity</td>
</tr>
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Two of the following:

- Unilateral pain
- Moderate or severe intensity pain
- Aggravation by simple physical activity
- Pulsating pain

Migraine with aura

At least three of the following:

- Reversible local brainstem or cortical dysfunction
- Aura develops over > 4 minutes, or two auras in succession
- Each aura < 60 minutes
- Headache < 60 minutes following aura

Episodic tension-type headache

Duration of 30 minutes to seven days

At least two of the following:

- Mild or moderate intensity pain
- Bilateral pain
- No aggravation by simple physical activity
- Pressing or tight (non-pulsating) pain
- No nausea/vomiting; may have light or noise sensitivity (not both)

Chronic tension-type headache

> 15 days pain per month, for > 6 months

At least two of the following:

- Mild or moderate intensity pain
- Bilateral pain
- No aggravation by simple physical activity
- Pressing or tight (non-pulsating) pain
- No vomiting; nausea only; light sensitivity; noise sensitivity

All of the above diagnostic criteria require the exclusion of secondary (i.e. pathologically verifiable) causes for pain. This is normally achieved on clinical grounds.
depression can result from bi-directional influences.\(^{(10)}\)

In many epidemiological and clinical studies, psychological stress is often mentioned as a potent factor that, in a hypothesised interaction with a dysregulated symptho-adrenomedullary and serotonergic system, leads to an actual migraine attack. The association of migraine and anxiety/depression has been attributed to: (i) the same underlying aetiological factors are common both in migraine and anxiety/depression, and (ii) migraine causes anxiety/depression or the converse. This study supports the findings that migraine is associated with certain personality traits. The presence of anxiety and depressive personality traits may warrant further psychological evaluation. Active screening using the MMPI-2 in migraine patients may identify these personality traits.

REFERENCES