Anger Levels, Emotional Stress, and Sleep Quality Among Migraine Patients: A Cross-Sectional Study of Psychological and Neurological Correlates

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Keywords: anger, emotional stress, sleep quality, migraine, tension-type headache.

Abstract

Introduction

Migraine and tension-type headache (TTH) are the most common headache disorders, and both have important burden to society. They also known to have significant impact to some psychological states such as anger and emotional stress as well as sleep quality. This study aims to describe the anger level, emotional stress level and sleep quality among migraine and TTH sufferers.

Methods

We included 19 migraine patients and 23 TTH patients from headache clinic in the H.Adam Malik Hospital, Medan as subjects. We used International Classification of Headache Disorders-3 (ICHD-3) to diagnosed migraine and TTH. The Clinical Anger Scale was used to measure the level of anger in each subject. To measure the degree of emotional stress in each subject we used Perceive Stress Scale, and Pittsburgh Sleep Quality Index was used as an instrument to measure sleep quality. The results are presented with descriptive statistic.

Results

From 19 subjects with migraine, 6 (31,6 %) of them had minimal clinical anger meanwhile from 23 subjects with TTH, 11 (47,8 %) of them also had minimal clinical anger. All of migraine subjects had moderate stress and so did most of the TTH subjects (87 %). Most of the subjects in each group had sleep disorder with migraine group 57,9 % and TTH group 73,9 %.

Discussion

Most of the migraine subjects and TTH subjects had minimal clinical anger. Most of the subjects with migraine or TTH had moderate stress. More than a half of migraine subjects and TTH subjects had sleep disorder. The degree of anger and emotional stress can be affected by some factors such as comorbidity

Introduction

Headache is the most common complaint of patients who come to the doctor, both to general practitioners and neurology specialists. Until now headaches are still a problem. Problems caused by headaches ranging from disturbances to sleep patterns, eating patterns, depression to anxiety.[1,2]

According to the IHS (International Headache Society) criteria adopted by PERDOSSI (Association of Indonesian Neurologists), headaches are divided into primary and secondary headaches. About 90% of headaches fall into the category of primary headache, the remaining 10% is in the category of secondary headache. It is called primary headache if there is no structural or metabolic damage underlying the headache. It is called secondary headache if the headache is based on the presence of structural or systemic damage. The most common headache diagnosed is primary headache, which is most often found is migraine or TTH (tension-type headache)[1,3]

In recent years, the scale of personal, social and economic losses from headaches has been found to increase, along with the widespread contribution of headaches to global health. Research conducted by the Global Burden of Disease (GBD) in 2010 determined that TTH was the highest prevalence of illness in the world (22%) and migraine was the third highest (15%). Data from the 2015 GBD found that more world-scale disability-adjusted life years (DALYs) were caused by headaches compared to other neurological disorders despite the fact that headaches did not have an effect on mortality. Headache ranks sixth among the main causes of years lived with disability (YLDs) in the world.[4]

Anger is a feeling with emotional, behavioral, physical and cognitive components and has a range from mild irritation to hatred and violence. Patients with headache have been reported to have high anger scores compared to healthy individual*s*.[5]

Various findings from several studies support the existence of an association between TTH, migraine and sleep disorders. This association is two-way, namely headache can increase the incidence of sleep disorders, but also sleep disorders can stimulate headache.[6]

Emotional stress is a trigger for migraine attacks in almost 70% of individuals. High-grade stress is reported in migraine patients, especially in patients suffering from chronic migraine. Meanwhile, stress is also a factor that contributes to TTH. The mechanism by which stress contributes to TTH is not clearly understood. Previous stress was thought to increase muscle tension in TTH sufferers.[7,8]

The purpose of this study was to analyze the description of the degree of anger, the degree of emotional stress and the quality of sleep in migraine and TTH patients.

Methodology

This research was conducted using cross-sectional methods. The study was conducted in the Neurology Department of the USU (North Sumatera University) Medical Faculty / H. Adam Malik General Hospital Medan and its network from 1 August 2018 - 30 September 2018. The research subjects were taken from the hospital patient population. Determination of research subjects was carried out according to the consecutive sampling method.

The inclusion criteria were all migraine and TTH patients who went to the Cephalgia Neurology polyclinic at Adam Malik Hospital and the hospital (RS) and gave approval to participate in this study. Prospective research subjects who were unable to speak Indonesian were excluded from this study. The minimum number of subjects for migraine sufferers is 14 people and TTH sufferers are 22 people.

To establish a diagnosis of migraine and TTH used the diagnostic criteria of the International Classification of Headache Disorders-3 (ICHD-3). To measure the degree of anger, Clinical Anger Scale (CAS) instruments are used with interpretation: minimal clinical anger (0-13), mild clinical anger (14-19), moderate clinical anger (20-28) and severe clinical anger (29-63). To measure the degree of emotional stress used Perceive Stress Scale (PSS) instruments with interpretations: low stress (0-13), moderate stress (14-26) and high perceived stress (27-40). To measure sleep quality, the Pittsburgh Sleep Quality Index (PSQI) instrument was used with interpretations: normal (0-5) and sleep disorders (6-21). The data obtained is then processed using descriptive statistics which are presented in tabulation form and described.

Figure:

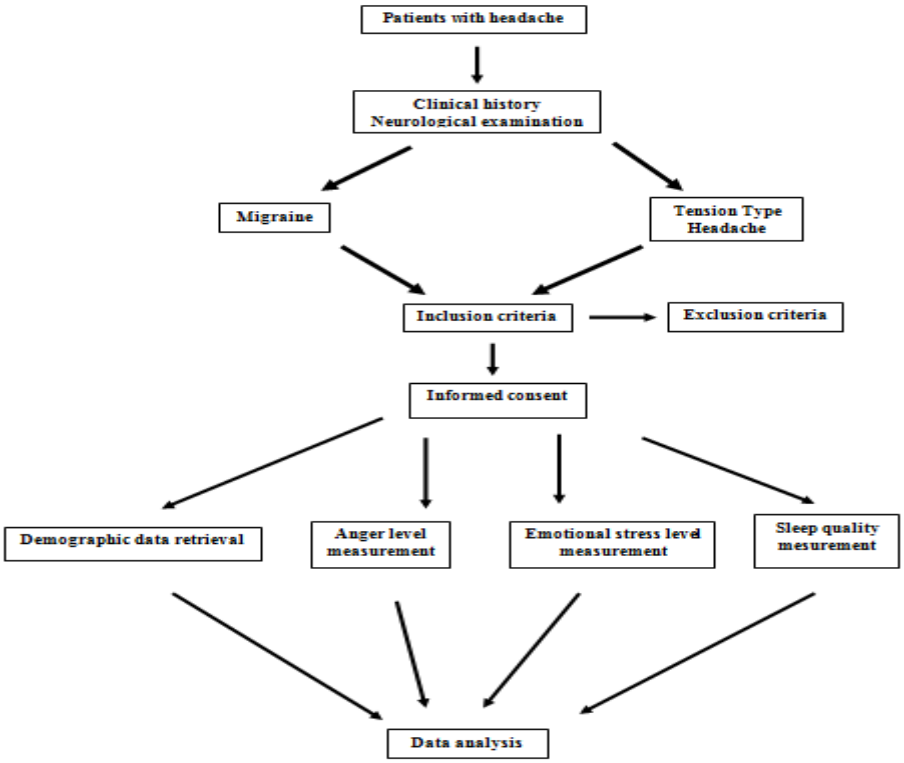

Figure 1. Operational scheme of the research

Results and discussion

Result

Demographic characteristics of the research subjects

Of the total migraine and TTH patients who visited the Cephalgia Neurology polyclinic of the H. Adam Malik Hospital in Medan and its hospital network in the period August to September 2018, the total subjects of this study were 42 research subjects (19 migraine sufferers and 23 people with TTH). Of the total research subjects 14 people (33.3%) were male and the remaining 28 (66.67%) were female.

Of the 42 subjects in this study 32 people (76.2%) of whom were patients with acute headache and the remaining 10 people (23.8%) suffered from chronic headache. Eight people (19.1%) complained of symptoms of visual aura and 2 people (4.8%) with sensory aura. Patients who experienced nausea symptoms were 9 people (21.4%), vomiting 6 people (14.3%), photophobia 3 people (7.1%) and phonophobia 4 people (9.5%).

Overview of anger degrees

In the subject of migraines totaling 19 people, it was found that subjects with mild and a minimum of clinical anger were 6 (31,6 %) people each. While there were 4 subjects (21.1%) with severe degrees of clinical anger and 3 subjects (15.8%) with moderate clinical anger.

In the research subject of TTH patients, amounting to 23 people, the highest proportion was a minimum clinical anger with the number of subject is 11 (47.8%) followed by mild clinical anger with a total of 6 subjects (26.1%). The remaining 4 subjects (17.4%) had moderate clinical anger and only 2 subjects (8.7%) had severe clinical anger.

Overview of the degree of emotional stress

In the study subjects of migraine patients, amounting to 19 people, it was found results that all of the subjects (100%) experienced moderate stress. In the research subjects of TTH patients, amounting to 23 people, it was found that most subjects as many as 20 people (87.0%) had moderate stress. Meanwhile, only 2 subjects (8.7%) with low stress and one subject (4.3%) with high perceived stress.

Overview of sleep quality

In the study subjects of migraine patients, amounting to 19 people, it was found that the proportion of subjects experiencing sleep disorders was more than those with normal sleep quality. Subjects with sleep disorders were 11 people (57.9%) and normal sleep quality was 8 people (42.1%).

In the study subjects of 23 people with TTH, the results showed that the proportion of subjects experiencing sleep disorders was more than those with normal sleep quality. Subjects with sleep disorders were 17 people (73.9%) and normal sleep quality was only 6 people (26.1%).

Discussion

The subject in this study there were 42 subjects with 19 people who were migraine sufferers and 23 people with TTH. Of the total research subjects 14 people (33.3%) were male and the remaining 28 (66.67%) were female.

This resembles the findings of Busch et all's study in 2008 where more women with headache patients were found with 590 people (56.4%) compared to male headache patients with 457 people (43.6%). This is also in line with the findings of Perozzo P et al in 2005, where the majority of headache sufferers were women, namely 65% with migraines, 65% with episodic tension-type headaches and 58% with chronic tension-type headaches.[9,10]

In four migraine patients with severe anger category, it was found that the four of them suffered from migraines with visual aura. One of these subjects had three migraine symptoms (nausea, vomiting and phonophobia). Of the four subjects, 2 of them suffered from acute migraine and 2 others suffered from chronic migraine. All four migraine patients had the VRS pain scale 9,8,7 and 7, which is a category of severe pain. All of them also experienced sleep disorders and moderate stress.

In the Karsikaya S. study in 2010, it was found that migraine patients with post-traumatic disorder, tend to have higher degrees of anger than healthy individuals.[5] A study conducted by Perozzo et al in 2005 on 201 headache patients and 45 healthy controls who analyzed anger, depression and behavioral analysis, found that all headache patients had lower anger control factors significantly and showed a high degree of anger, angry

temperament and angry reaction. The study also shows the connection between anger and the duration of headache experience.[10]

Out of a total of 19 migraine patients in this study, all of them had moderate stress and 12 patients had acute migraine (63.2%). Whereas in the subject with TTH in this study which numbered 23 patients, 20 of them (87.0%) had moderate stress. Meanwhile, only 2 patients (8.7%) with low stress and one patient (4.3%) with high perceived stress.
One TTH subject who had a high perceived test had 30 years of headache. The subject also had comorbid diseases, namely hypertension and uncontrolled dyslipidemia.

The study by Busch M et al. In 2008 was found that the characteristics of migraine were more related to experience of stress compared to TTH.[9]

In this study, there were 11 migraine patients with sleep disorders (57.9%) and 8 people with normal sleep quality (42.1%). While TTH subjects with sleep disorders were 17 people (73.9%) and normal sleep quality were only 6 people (26.1%).

Lin et al. In 2016 conducted a cross-sectional study which included 357 subjects to analyze the relationship between the quality of sleep and migraines in Taiwan. The total score of PSQI was highest in the group with migraine attacks of more than 14 days per month (mean 10.0 $\pm$ 3.4) and lowest in control subjects (mean 7.0 $\pm$ 3.4) with a significant p value (0.006). High migraine frequency correlates with poor sleep quality, this relationship applies to both aura and migraine without aura.[11]

Poor sleep quality may contribute to increased pain sensitivity and also increase the frequency of attacks of headache, thus providing findings that the severity and frequency of sleep problems is a line with the frequency of headache. In fact, it has been found that depression and sleep quality mediates the relationship between the frequency of headache and the emotional burden of headache and experience pain in chronic TTH sufferers. A complex relationship of sleep quality, depression and headache seems to underlie the increased excitability of the central nervous system.[6]

Tables:

Table 1. Demographic and clinical characteristics of subjects

Characteristics	Migraine n=19	TTH n=23
Age in year, mean ± SD	43,79±17,17	47,30±14,58
Sex, n (%)		
Male	5(26)	10(43)
Female	14(74)	13(57)
Tribe, n (%)		
Batak	10(53)	7(31)
Mandailing	0	1(4)
Karo	4(21)	8(35)
Minang	1(5)	2(9)
Jawa	3(16)	3(13)
Melayu	1(5)	1(4)
Sunda	0	1(4)
Education level, n (%)		
Elementary school	0	1(4)
Junior high school	2(11)	1(4)
Senior high school	7(36)	7(31)
Diploma	3(16)	3(13)
First degree college	7(37)	9(39)
Second degree college	0	2(7)
Occupation, n (%)		
Unemployment	2(11)	2(7)
Housewife	6(31)	6(26)
Entrepreneur	6(31)	6(26)
Government employee	2(11)	7(30)

Retired	3(16)	2(7)
Marital status, n (%)		
Unmarried	3(16)	4(17)
Married	16(84)	19(83)
Verbal rating scale score, mean ± SD	7,47±0,77	4,17±1,02
Chronicity, n (%)		
Acute	12(63)	20(87)
Chronic	7(37)	3(13)
CAS score, mean ± SD	19,05±11,14	16,04±7,63
Score PSS, mean ± SD	19,58±3,78	18,26±3,86
PSQI score, mean ± SD	8,79±5,62	7,91±4,11
Aura, n (%)		
Visual	8(42)	0
Sensory	2(10)	0
Nausea, n (%)	6(31)	3(13)
Vomited, n (%)	4(21)	2(9)
Photophobia, n (%)	1(5)	2(9)
Phonophobia, n (%)	3(16)	1(4)
Systolic BP in mmHg, mean ± SD	120,79±17,34	122,17±13,80
Diastolic BP in mmHg, mean ± SD	77,37±8,71	80,00±7,97

Table 2. Anger level on migraine subjects

Anger level	**N (%)**
Mild Clinical Anger	6 (31,6)
Minimal Clinical Anger	6 (31,6)
Moderate Clinical Anger	3 (15,8)
Severe Clinical Anger	4 (21,1)

Table 3. Emotional stress level on migraine subjects

Emotional stress level	**N (%)**
Low Stress	0 (0,0)
Moderate Stress	19 (100,0)
High Perceived Stress	0 (0,0)

Table 4. Sleep quality on migraine subjects

Sleep quality	**N (%)**
Normal	8 (42,1)
Disorder	11 (57,9)

Table 5. Anger level on TTH subjects

Anger level	**N (%)**
Mild	6 (26,1)
Minimal	11 (47,8)
Moderate	4 (17,4)
Severe	2 (8,7)

Table 6. Emotional stress level on TTH subjects

Emotional stress level	**N (%)**
Low Stress	2 (8,7)
Moderate Stress	20 (87,0)
High Perceived Stress	1 (4,3)

Table 7. Sleep quality on TTH subjects

Sleep quality	N (%)
Normal	6 (26,1)
Disorder	17 (73,9)

Conclusion

From this study we get the following conclusions:

- Most migraine and TTH patients have a minimum of clinical anger.
- Most migraine and TTH patients have moderate stress.
- Most migraine and TTH patients suffer from sleep disorders.
- The value of anger and stress degree can be influenced by other factors such as the presence of comorbid diseases.

Acknowledgements

I would like to express my special thanks of gratitude to my lecturers who gave me the golden opportunity to do this wonderful project, which also helped me in doing a lot of research. Secondly I would also like to thank my parents, my lovely wife and friends who helped me a lot in finalizing this project within the limited time frame.

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