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Exploring the Interplay Between Gastrointestinal Symptoms, Pain Characteristics, and Disability in Migraine Patients

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Abstract

Aim: The aim of this study was to investigate the relationship between gastrointestinal (GI) symptoms, pain characteristics, and disability status in individuals with migraine.

Materials and Methods: The study included 50 individuals diagnosed with migraine. To assess the correlation between GIS symptoms, pain characteristics, and disability, the researchers employed three primary evaluation tools: Gastrointestinal Symptom Rating Scale (GSRS), Visual Analogue Scale (VAS), Migraine Disability Assessment Scale (MIDAS).

Results: The statistical analysis of the data suggests that the overall severity of GI symptoms and specific symptoms like abdominal pain, reflux, diarrhea, indigestion, and constipation does not consistently increase with the intensity of migraine pain. The mean GSRS Total Score values did not significantly differ based on the frequency of attacks ($p=0.649$). MIDAS scores showed no significant correlation with GSRS-total ($p=0.649$), GSRS constipation ($p=0.973$), GSRS-abdominal pain ($p=0.792$), GSRS-reflux ($p=0.254$), GSRS-diarrhea ($p=0.345$), and GSRS-indigestion ($p=0.261$) scores.

Discussion and Conclusion: In the intricate tapestry of migraine and its associated symptoms, the relationship between the severity of migraine pain, frequency of attacks, migraine disability status and GI symptom severity might be more nuanced than initially thought. This discovery invites researchers to delve deeper into the multifaceted connections between the neurological and gastrointestinal systems and encourages a holistic approach to understanding and managing migraine and its associated symptoms.

Introduction

Migraine is a complex neurological disorder characterized by recurring severe headaches often accompanied by other symptoms such as nausea, vomiting, and sensitivity to light and sound [1]. Migraine, a debilitating neurological condition has long intrigued researchers due to its complex nature. Migraine, a complex neurological disorder, has intrigued researchers for years due to its varied symptoms and potential associations with other bodily systems. However, recent research has shed light on the potential

link between migraine and gastrointestinal (GIS) symptoms [1,2]. This study delves into the relationship between GIS symptoms, pain characteristics, and disability in patients with migraine.

Methodology

The study included 50 individuals aged 18 to 56 years diagnosed with migraine according to the International Headache Society criteria [3]. The aim of this study was to investigate the relation-



ship between gastrointestinal (GI) symptoms, pain characteristics, and disability status in individuals with migraine.

Exclusion criteria for the study were as follows:

- Presence of organic GI diseases
- Presence of neurological conditions (such as Parkinson's disease, multiple sclerosis, etc.), rheumatological conditions (such as Crohn's disease, ankylosing spondylitis, etc.), or endocrine conditions (such as hyper-/hypothyroidism) that could be related to GI symptoms
- History of malignancy

Demographic data of participants (age, gender, marital status, education level), smoking and alcohol use, caffeine consumption, exercise habits, chronic disease history, frequency and duration of headaches, presence of aura, attack frequency, and analgesic use were investigated. Migraine-related disability status was assessed using the Migraine Disability Assessment Scale (MIDAS) [4], pain severity using the Visual Analog Scale (numerical MIDAS), and gastrointestinal symptoms using the Gastrointestinal Symptom Rating Scale (GSRS) [5].

- Gastrointestinal Symptom Rating Scale (GSRS): This tool measures GIS symptoms and consists of several subscales, including reflux, indigestion, abdominal pain, diarrhea, and constipation.
- Visual Analogue Scale (VAS): The VAS was used to determine the pain intensity and attack frequency experienced by patients over the last three months.
- Migraine Disability Assessment Scale (MIDAS): The MIDAS assesses the impact of migraine on an individual's daily life and functioning.

Statistical Method:

The data were analyzed using IBM SPSS V23. The Shapiro-Wilk test was employed to assess the normality of distribution. Independent samples t-test and ANOVA were used for comparing normally distributed variables. For multiple comparisons, the Duncan test was utilized. Non-normally distributed data were compared using the Mann-Whitney U test and Kruskal-Wallis tests. Spearman's rho coefficients were considered for assessing relationships. A significance level of $p < 0.05$ was adopted.

Results

In our study, it was observed that the characteristics of migraine, gastrointestinal involvement and disability did not change according to demographic characteristics, chronic disease, exercise, smoking, alcohol and caffeine consumption.

The median values of the MIDAS (Migraine Disability Assessment Scale) do not show a significant difference based on gender ($p=0.588$). The mean values of the GSRS (Gastrointestinal Symptom Rating Scale) Total Score ($p=0.063$), GSRS Abdominal Pain ($p=0.93$), GSRS Reflux ($p=0.407$), GSRS Diarrhea ($p=0.235$), GSRS Indigestion ($p=0.243$) do not exhibit a significant difference according to gen-

der. The median values of GSRS Constipation show a significant difference based on gender ($p=0.007$). The median value for males is 3.0, and for females, it's 6.0.

There is no significant relationship between age and the other measurements. The median values of the MIDAS and GSRS scores do not show a significant difference based on the presence of chronic illness ($p=0.472$). The median values of the MIDAS do not show a significant difference based on marital status ($p=0.847$). The mean values of the GSRS Scores do not exhibit a significant difference according to marital status (total score $p=0.965$, abdominal pain $p=0,869$, reflux $p=0,752$, diarrhea $p=0,214$, indigestion $p=0,858$, constipation $p=0,866$). The median values of the MIDAS do not show a significant difference based on smoking status and alcohol use status ($p=0.757$). The mean values of the GSRS Scores do not exhibit a significant difference according to smoking status and alcohol use status (total score $p=0.501$, abdominal pain $p=0,453$, reflux $p=0,565$, diarrhea $p=0,339$, indigestion $p=0,379$, constipation $p=0,505$).

The median values of the MIDAS and GSRS scores do not show a significant difference based on caffeine consumption frequency ($p=0.524$). The mean values of the MIDAS and GSRS scores do not show a significant difference based on exercise frequency ($p=0.494$). The median values of the MIDAS scale do not show a significant difference based on the presence of aura ($p=0.399$). The mean values of the GSRS Scores do not exhibit a significant difference according to the presence of aura (total score $p=0.792$, abdominal pain $p=0,344$, reflux $p=0,588$, diarrhea $p=0,551$, indigestion $p=0,393$, constipation $p=0,083$).

The mean values of the MIDAS scale exhibit a significant difference based on the severity of headache ($p=0.019$). The average value is 5.8 for those with moderate headache severity, 7.1 for those with severe headache, and 7.5 for those with very severe headache. The average value for those with moderate headache is lower than the others. The mean values of the GSRS Scores do not show a significant difference based on the severity of headache (total score $p=0.484$, abdominal pain $p=0,608$, reflux $p=0,417$, diarrhea $p=0,427$, indigestion $p=0,33$, constipation $p=0,084$).

The median values of MIDAS do not show a significant difference based on attack frequency ($p=0.611$). The median values of GSRS Reflux exhibit a significant difference based on attack frequency ($p=0.014$). The median value for those with 1-2 attacks per month is 3, for those with 3-4 attacks per month is 2, and for those with more than 4 attacks per month is 6. The value for those with more than 4 attacks per month is higher than the others. But the other mean values of GSRS Scores do not exhibit a significant difference based on attack frequency (total score $p=0.649$, abdominal pain $p=0,973$, diarrhea $p=0,792$, indigestion $p=0,956$, constipation $p=0,223$).

Discussion

Migraine, a debilitating neurological condition characterized by throbbing headaches and a range of associated symptoms, has long intrigued researchers due to its complex nature. Migraine, a

complex neurological disorder, has intrigued researchers for years due to its varied symptoms and potential associations with other bodily systems [6]. Our study delved into a potential link between migraine and gastrointestinal (GI) symptoms, aiming to decipher whether migraine pain characteristic and disability status of migraine are correlated with specific GI symptoms and their impact on patients' lives.

Contrary to initial expectations, the mean GSRS Total Score values did not show significant differences according to the severity of headache ($p=0.484$). This suggests that the overall severity of GI symptoms does not significantly change as migraine pain becomes more intense. Looking at specific GI symptoms, the mean values of GSRS Abdominal Pain, GSRS Reflux, GSRS Diarrhea, GSRS Indigestion, and GSRS Constipation did not display significant differences based on the severity of headache ($p>0.05$ for all comparisons). In simpler terms, the intensity of migraine pain does not appear to strongly influence the average severity of these individual GI symptoms.

In the intricate landscape of migraine and its associated symptoms, the relationship between GI symptoms and the severity of migraine pain is not as straightforward as expected. These results open up avenues for further investigation into the intricate connections between the neurological and gastrointestinal systems. The lack of a strong correlation between migraine pain severity and GI symptom severity suggests that other factors, such as individual variations in neurobiological responses, might be at play [7,8].

Surprisingly, the mean GSRS scores values did not significantly differ based on the presence of aura ($p=0.792$). This suggests that the overall severity of GI symptoms remains relatively consistent regardless of whether aura accompanies the migraine. These results suggest that the central tendency of these GI symptoms does not notably shift based on whether aura is experienced [8,9].

Interestingly, the mean GSRS scores values did not significantly differ based on the frequency of attacks ($p=0.649$). This suggests that the overall severity of GI symptoms remains relatively stable regardless of the frequency of migraine episodes. However, when it comes to GSRS Reflux, the median values did show notable differences based on attack frequency ($p=0.014$). Individuals experiencing more than 4 attacks per month had a higher median value of reflux symptoms compared to those with lower attack frequencies. This suggests a potential correlation between higher attack frequency and more severe reflux symptoms. These findings provide valuable insights into the complex relationship between migraine attack frequency and GI symptoms. While the overall severity of GI symptoms may not dramatically change based on the frequency of attacks, there are nuances to consider [10,11]. The potential connection between higher attack frequency and increased severity of reflux symptoms raises questions about the underlying mecha-

nisms linking these two systems. Strikingly, the mean GSRS scores values did not display significant differences based on the severity of headache ($p=0.484$). This suggests that the overall severity of GI symptoms remains relatively consistent across different levels of migraine pain intensity.

Conclusion

This discovery invites researchers to delve deeper into the multifaceted connections between the neurological and gastrointestinal systems and encourages a holistic approach to understanding and managing migraine and its associated symptoms.

Acknowledgement

None.

Conflict of Interest

No Conflict of interest.

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