

Headache and Covid-19: Experience from the Covid-Centre at the University Clinic of Neurology in Skopje

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DOI: 10.31080/ASMS.2022.06.1195

Received: May 16, 2021

Published: February 15, 2022

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Abstract

Introduction: Corona virus infectious disease 2019, (Corona virus disease-19, Covid-19), commonly is manifested with severe respiratory syndrome and interstitial pneumonia. Beside these respiratory symptoms, the clinical spectrum of the disease consists of neurological symptoms. A headache is one of them.

Aim: The aim of this study is to determine the cumulative prevalence of a headache in patients with Covid-19, that were hospitalized at the Clinic of neurology in Skopje, from November 2020 to the end of March 2021. This study also aimed to determine the cumulative prevalence of patients with positive outcome and successful rehabilitation and, on the other side, the prevalence of the patients with poor outcome.

Methods and Materials: The data was extracted from HIS system (electronic data base for outpatient clinic and hospitalized patients in our Clinic). In the study were included 437 patients, hospitalized in the Covid -centre. We have calculated the cumulative prevalence of headache in these patients. Additionally, we have determined the prevalence of headache in patients with good and with poor outcome of the disease.

Results: Headache was found in 44 patients out of 437, with confirmed Covid-19 infection. The estimated cumulative prevalence is 10.06%. The patients with headache had more favorable outcome of the COVID-19 infection (37 patients out of 270 with favorable outcome has complained of a headache in the early stage of the disease, and only 4 patients out of 120 with fatal outcome, had a headache ($P = .002058$, ($P < .05$)). Three patients, who have complained of a headache, out of 47, were transferred to another medical institution.

Conclusion: Headache is a common symptom among patients with infectious diseases, whether it is a part of the general infectious syndrome or it is a sign of a direct cerebral affection. The headache could be a predictive symptom for more favorable outcome of this infectious disease.

Keywords: Headache; Covid-19; Prevalence

Introduction

Coronavirus disease-19 (Covid-19) is an infectious disease caused by Sars-Cov-2, commonly manifested with severe acute

respiratory syndrome and interstitial pneumonia. As a multisystem disease, patients with Covid-19 have other clinical signs and symptoms except respiratory symptoms. Neurological manifesta-

tions are one of them. Central nervous system, as well as peripheral nervous system, can be affected by Covid-19 [1].

Headache is one of the main neurological symptoms of corona virus infection including SARS-CoV-2. Headache, as a neurological symptom, can appear solitary or in association with other signs and symptoms, like anosmia, ageusia, diahorea, reduced appetite, loss of weight etc. [1,2].

Primary headache in patients with Covid-19 has features of migraine, cluster headache or tension- type headache, but it is much

more severe and disabling. It has a partial answer of analgesic therapy, mainly Paracetamol and NSAID [1].

There are several underlying pathophysiological mechanisms for headache in Covid-19 patients, but the main and widely accepted is the direct mechanism, where Sars-Cov-2 is stimulating the trigeminal nerve endings at the nasal cavity. Consequently, it provokes sensitization of the trigeminal-caudal centre and other regions of the brain, giving additional signs and symptoms from the Central Nervous System (CNS) [1,3].

Figure 1: Proposed mechanism of headache pathophysiology in patients with Covid-19 [1].

Trigeminal sensory afferents, innervating cranial structures, vasculature and the dura, converge with cervical afferents from the upper cervical dorsal root ganglion (CG) in the trigeminocervical complex (TCC) in the brainstem and upper cervical spine. Second order neurons from the TCC project to the thalamus, from which thalamocortical neurons relay sensory information to multiple cortical areas (motoric, somatosensory, auditory, retrosplenial and visual centers). These are the third-order neurons, responsible for various symptoms that may accompany the headache.

Everyone who has symptoms that are consistent with COVID-19, as well as people with known high-risk exposures to SARS-CoV-2, should be tested for SARS-CoV-2 infection. Such testing should employ either a nucleic acid amplification test (NAAT) or an antigen test to detect SARS-CoV-2.

Most people who become sick with COVID-19 will only experience mild illness and can recover at home. Symptoms might last a few days, and people who have the virus might feel better

in about a week. Treatment is aimed at relieving symptoms and includes rest, fluid intake and pain relievers. However, older adults and people of any age, especially those with existing medical conditions, can experience severe symptoms and these patients need medical attention immediately.

Aim

In this study, our aim was to determine the cumulative prevalence of a headache in patients with Covid -19, hospitalized at the Covid centre in our clinic, in the period of five months, starting from November 2020 to the end of March 2021. This study also aimed to determine the cumulative prevalence of patients with positive outcome and successful rehabilitation and, on the other side, the prevalence of patients with poor /fatal outcome.

Our initial motive was to conduct a validation study that will compare the obtained results from the patients of our Covid centre with the results published in the recent literature.

Materials and methods

The data was extracted from HIS system (electronic data base for outpatient clinic and hospitalized patients in our clinic). In this study were included 437 patients, hospitalized at the Covid –centre in our clinic, in the determined period. We have calculated the cumulative prevalence of headache in these patients. Additionally, we have determined the prevalence of headache in patients with good and with fatal outcome of the disease. We were using the statistical method X2 test, significant if $P < .05$.

Results

The cumulative prevalence rate of headache was calculated for COVID-19 cases in the hospitalized patients. The prevalence was calculated as the number of COVID-19 cases with headache divided by the total number of COVID-19 cases, expressed as a percentage (%).

A headache was reported by 44 patients out of 437 with confirmed Covid-19 infection. So, the estimated cumulative prevalence is 10.06%.

The patients with headache who had favorable outcome of the COVID-19 infection, was 37 patients out of 270 (13.7%) and only 4 patients out of 120 with fatal outcome, had a headache in the early stage of the disease (3.3%). Three patients with a headache, out of 47, were transferred to another medical institution and these patients were not included in the statistical analysis of data.

The association between headache and the presence of COVID-19 was assessed by the calculation of X^2 value ($p < 0.05$ was considered statistically significant). In our study, the value of X^2 is 9,497, and $P = .002058$. The value has shown statistical dependence of the analyzed variables.

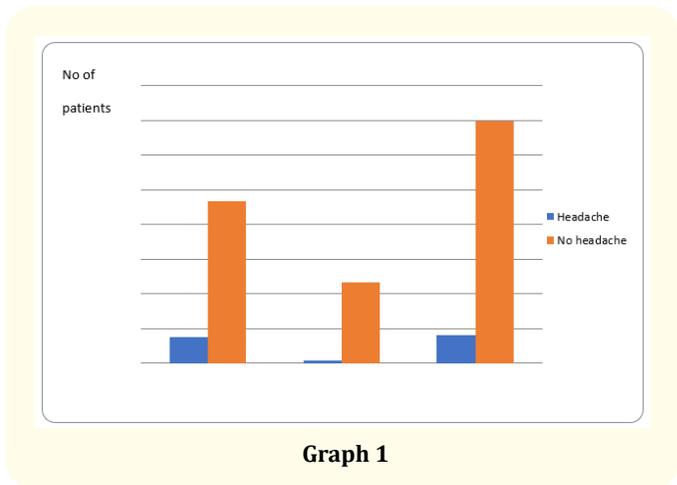
With these results, we can take the conclusion that, patients who had headache at presentation at our COVID center, had more favorable outcome compared to the patients who didn't have headache.

These results are presented in the table below and in the graph.

The results were consistent with the published data on this subject [4-9].

	Headache	No headache	Total
Favorable outcome	37 (28.38) [2.61]	233 (241.62) [5.88]	270
Unfavorable outcome	4 (12.62) [0.31]	116 (107.38) [0.69]	120
Column Totals	41	349	390

Table 1: Representation of obtained data.



Graph 1

Conclusion

Our initial motive was to conduct a validation study that will compare the obtained results from the patients of our Covid centre with the results published in the recent literature.

Therefore, we came to the conclusion that a headache in patients with Covid-19, in the early stage of the disease, might be a predictive symptom of more favourable outcome of the disease. Headache is a common symptom in infectious diseases, whether it is a part of general signs and symptoms of the infectious disease or it is a symptom of a direct cerebral affection. The cumulative prevalence is in the range of global data for cumulative prevalence of headache in patients with Covid-19.

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