https://doi.org/10.47993/gmb.v46i1.643

Idiopathic intracranial hypertension associated with COVID-19 infection

Hipertensión intracraneal idiopática asociada a infección por COVID 19

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Resumen

Se presenta el caso de una paciente adulta joven con antecedente de ovario poliquístico e infección reciente por COVID 19 que inicia con cuadro de astenopia y visión borrosa junto con cefalea, se realiza fondo de ojo con papiledema bilateral, estudios de laboratorio y neuro imagen sin hallazgos positivos, también punción lumbar con presión de apertura elevada por lo que se diagnostica hipertensión intracraneal idiopática con posterior mejoría post punción.

Palabras claves: infección por Coronavirus 2019-nCoV, baja visión, hipertensión intracraneal idiopática.

Abstract

The case of a young adult patient is presented with a history of polycystic ovary and recent infection by COVID 19 that starts with asthenopia and blurred vision along with headache, fundus examination with bilateral papilledema was performed, laboratory and neuroimaging studies without positive findings, also lumbar puncture with elevated opening pressure so idiopathic intracranial hypertension was diagnosed with subsequent post puncture improvement.

Keywords: COVID-19 Virus infection , low vision , idiopathic intracranial hypertension.

Idiopathic intracranial hypertension is a rare disorder characterized by elevated intracranial pressure with normal cerebrospinal fluid composition and without intracranial pathology[1]. This condition primarily affects women of childbearing age and often presents with headaches, visual loss, diplopia, tinnitus, and nausea[2]. On the other hand, globally, the severity of coronavirus disease 2019 (COVID-19) has frequently been associated with acute respiratory distress syndrome[3], along with neurological complications such as headache, seizures, cerebrovascular disease, viral encephalitis, acute disseminated encephalomyelitis, Guillain-Barré syndrome, and anosmia[4]. Herein, we present a case of an atypical presentation of intracranial hypertension as a potential complication of COVID-19 infection in a young adult patient with no neurological history.

Clinical Case Presentation

A 26-year-old female patient with a history of polycystic ovary syndrome and COVID-19 infection presented with mild symptoms of dry cough, clear rhinorrhea, asthenia, and adynamia, without the need for hospitalization, one month prior. Subsequently, she reported asthenopia associated with occasional blurred vision and holocranial headache. Upon physical examination, she was alert, afebrile, and hemodynamically stable. Fundoscopy revealed papilledema in the left eye, with optic disc showing poorly defined elevated margins and peripapillary nerve fiber layer atrophy with central emergence in vessels. Advanced findings in the right eye included optic disc with diffuse and elevated margins, peripapillary nerve fiber layer atrophy in the upper and lower temporal and nasal quadrants, and evidence of macular exudates. Brain and orbital magnetic resonance imaging were within normal limits, as was the hemogram. Serological tests for various antibodies were negative, except for an elevated ADA level. A subsequent lumbar puncture showed elevated opening pressure (40 cmH2O) with normal cerebrospinal fluid. The diagnosis of idiopathic intracranial hypertension was made, with improvement noted post-lumbar puncture. Treatment with acetazolamide 500 mg every 12 hours was initiated, and the patient showed good tolerance and clinical improvement upon discharge after five days of hospitalization.

Discussion

Idiopathic intracranial hypertension is caused by an elevation of intracranial pressure, primarily affecting young obese women of childbearing age, and its prevalence ranges between 0.5 and 2 per 100,000 of the general population[5]. Etiological associations may be related to endocrine-metabolic disturbances (thyroid disorders, Cushing's syndrome), medications (vitamin A, growth hormone, antibiotics), systemic conditions (anemia, Guillain-Barré syndrome), and infections (otitis media, sinusitis, pharyngitis)[3]. Visual disturbances and headache are the two main symptoms of idiopathic intracranial hypertension, though other manifestations such as cranial nerve palsies, cognitive deficits, olfactory deficits, and tinnitus are not uncommon. The

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Received on September 20, 2022. Accepted on January 14, 2023.

Figure 1. Left fundus: Papilledema, optic disc with poorly defined raised borders, with atrophy of peri-disc nerve fibers, central emergence in vessels.

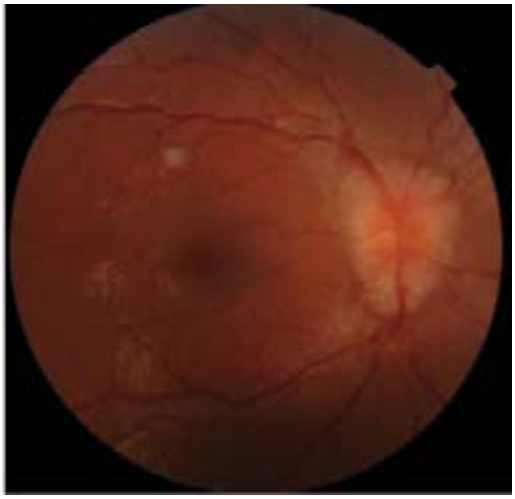

Figure 2. Right fundus: optic disc with raised and diffuse borders with central emergence in vessels, atrophy of the neritic fiber layer in the upper and lower temporal and nasal quadrant, evidence of exudates.

headache associated with idiopathic intracranial hypertension often has a migrainous phenotype. The underlying cause of the disorder has yet to be elucidated[5]. For diagnosis, fundoscopy is crucial, as papilledema is found in almost all patients. It has been suggested that SARS-CoV-2 infection can cause blockage of the lymphatic vessels, as the virus can infect lymphatic endothelial cells, which may increase the resistance to CSF outflow and generate a variant of idiopathic intracranial hypertension[6]; capillary endothelial cells of the central nervous system express the ACE2 receptor of the virus, which could give the virus its neuroinvasive nature that generates various neurological manifestations such as encephalitis, meningitis, intracerebral hemorrhage, headache, and ischemic stroke[7]. Additionally, it has been described that coagulation dysfunction can cause venous congestion and increase intracranial pressure. Previous single-cell transcriptomics has identified undifferentiated monocytes and exhausted T cells in the cerebrospinal fluid of patients[8]. In our case, the brain MRI was normal without the presence of thrombi, however, the association of idiopathic intracranial hypertension with SARS-CoV-2 could be attributed to an inflammatory state, high viscosity, and a hypercoagulable state.

Conclusion

For the primary care physician, accurate diagnosis of idiopathic intracranial hypertension is crucial since visual impairment due to papilledema can be irreversible. It is also important to recognize that one of its etiologies can be infectious, as in our case, which presents secondarily to COVID-19.

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