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CASE REPORT

Association of COVID-19 and brain tumor

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Abstract

COVID-19 had its first diagnosis in December 2019 in the city of Wuhan, in China, and it quickly spread around the world. After its outbreak, it was declared a pandemic by the WHO (World Health Organization) on March 11, 2020. Due to being a novel disease with a broad range of clinical presentations, it is necessary to exchange information for a faster and more effective diagnosis and prevention as far as vaccines and treatments are being researched. Children are prone to be less affected than adults and to a lesser extent. The clinical presentations vary from asymptomatic ones to extremely severe multisystem inflammatory syndrome that resembles Kawasaki syndrome and/or toxic shock and death. The pediatric age group usually presents severe and fatal forms of COVID-19 mainly in association with comorbidities such as hematological, immunological, respiratory, genetic, neurological diseases, and cancer. It will be report the case of a 7-year-old child diagnosed with choroid plexus carcinoma 5 years ago, who tested positive for COVID-19. The dissemination of case reports is urgent in order to expand the knowledge of this new pathology.

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INTRODUCTION

COVID-19 is a new disease with characteristics broad clinical spectrum. The clinical picture in children presents from asymptomatic to severe syndrome multisystemic inflammatory disease[1-5]. the children look like be less affected than adults in about 2%, according to Chinese Center for Disease Control and Prevention and with lower gravity. In the US, 5% of the total cases are children and only 1% required hospitalization. The incubation period ranged from 2 to 14 days. 95% develop symptoms within 13 days of contact. THE home transmission occurred in 82% of cases and the clinical presents as follows: asymptomatic in 10% of children, fever in 44 to 50%, cough in 38%, in addition to others such as fatigue, rhinitis, dyspnea, cyanosis, poor acceptance food to multisystem inflammatory syndrome that resembles Kawasaki syndrome and/or shock syndrome toxic. Pediatric patients seem to have more conditions gastrointestinal symptoms that adults and children under 3 years of age and those with heart disease seem to be more affected, however with low mortality[2,4-10,11-14].

CASE REPORT

Patient: MGA, 7 years old, male, white, diagnosed 5 years ago with choroid plexus carcinoma, weight: 30 kg, height: 123 cm; sc: 1.05 m^2; brachial circumference (BC): 24; Functional State Scale (FSS): 21; General Performance Scale (POPC): 5 and Brain Performance Scale (PCPC): 5, Glasgow Scale (AO: 4, RV: 0, RM: 3): 7; with oropharyngeal cannula and Venturi mask 50%, saturating 90-92%, hydrated, pale 1+/4+, anicteric, afebrile (post-dipyrone), acyanotic, with compromised respiratory drive, swollen with Cushingoid facies and slight nostril bleeding. He was in a convulsive crisis with a combined deviation of his left eye, mydriatic pupils with slow photoreaction and decortication, and he was on phenytoin due to the refractoriness to diazepam and phenobarbital received in the first visit.

CVA: Normal Heart sounds in 2 T S/S HR: 147 bpm BP: 62x30mmHg

RA.Resp: LS + bilateral with sparse snoring Sat: 90-92% with Venturi 50%

Abdomen: globose, flaccid, without visceromegaly, painless, sudden negative decompression, RHA (+) and normal;

Limbs: peripheral pulses (+) with edema 2+/4+, infusion of 3-4 seconds and ecchymosis at the puncture sites.

Due to respiratory distress and decreased level of consciousness (Glasgow 7), we opted for orotracheal intubation with a 5.5 cannula with cuff for administration of oxygen therapy and continuous infusion of midazolam.

Previous Pathological History:

Born by cesarean section at a gestational age of 39 weeks, weight 3295g and normal neuropsychomotor development until the diagnosis of choroid plexus carcinoma at 20 months of age, in 2014. The parents report chemotherapy treatments, 8 neurosurgical procedures, autologous bone marrow transplant and exclusive palliative care since October/19. Since 04/14/2020 he presented a loss of skills such as: he stopped talking, seeing and listening. After 4/24 he stopped walking and was receiving an oral diet with thickener, with difficulty. On April 27, at around 23:00, he started having a seizure disorder; he was taken to emergency services where he had a feverish peak of 38°C. He was treated with dipyrone, diazepam, phenobarbital, phenytoin and transferred to our Service (reference for oncological treatment for children and adolescents in the region); he had a convulsive condition with risk of respiratory depression and consequent respiratory arrest. Orotracheal intubation was chosen for the minor's comfort and the use of continuous midazolam to cease seizure. After intubation, the chest X-ray showed pulmonary infiltrate bilaterally with hypotransparency in the left base and consequently diagnostic hypotheses of SARS-CoV-2 or bronchoaspiration. Routine examinations of admission to the ICU (table 1), Real-Time Polymerase Chain Reaction (RT-PCR) and bronchial aspirated material were performed, the result of which was positive for SARS-CoV-2.

He was under clarithromycin for 10 days, levetiracetam, levothyroxine, dexamethasone 0.75mg/day (in previous use) and midazolam up to 0.6mg/kg/h. This was progressively reduced as of 05/05, because his EEG was diffusely slow and disorganized, with signs of suffering from the midline and posterior fossa without signs of epileptic illness. Clobazam 10mg of 12/12h was introduced, midazolam was withdrawn on 5/7, amlodipine and spironolactone were started due to hypertensive peaks and he was intubated, receiving a nasoenteric tube diet.

The Palliative Care Team (ACT) explained to parents the possibility of palliative extubation and/or tracheostomy with Home Care, but only with their consent. The tracheostomy was performed on 05/22; and since he did not have a respiratory drive, he was discharged from the ICU with bipap mechanical pulmonary ventilation, anticonvulsants and antihypertensive agents. He left the isolation only after 2 negative tests for SARS-CoV-2 (RT-PCR) - with hospital discharge and Home Care support on 6/1 with weight: 28.4 kg, height: 123cm, BC: 23, FSS: 29; POPC: 5 and PCPC: 5

Radiological exams

The radiological images are shown in figures 1 and 2.

Being, respectively, admission to the ICU and post tracheostomy surgery.

DISCUSSION

The Ministry of Health, through the Coronavirus panel in Brazil, confirmed 526,447 cases, 29,937 deaths, incidence of 250.5/100 thousand inhabitants and mortality of 14.2/100 thousand inhabitants until the date of discharge on June 1, 2020 (date of hospital discharge). The diagnosis of COVID-19

Table 1. Laboratory tests.

	04/28/2020	05/25/2020-Pre-tracheostomy	Discharge 06/01/2020
Total Calcium	9.09		9.47
Ionized calcium	1.04	1.06	1.17
Chlorine			96
Sodium	143	136	139
Potassium	2.6	3.6	4.7
Glycemia	155.1		
Magnesium	2.11	2.25	2.32
Phosphorus			5.57
TGO	25.6	49.6	
TGP	83.3	80.5	
Urea	10	9	10
Creatinine	0.51	0.51	0.51
TTPA	26.4	35	
TP	12	12	
D-Dimer	2.91(VR:0-0.5mcg/ml)		
CRP	103.72 (VR:0-6mg/l)	67.97	4.59
DHL	482U/l		
Red Cells	3.06	3.10	3.45
Hb	10.3	10.3	9.6
Ht	30.4	31.4	29.2
Leucocytes	7100	7700	6100
Rods	1	2	1
Segmented	77.7	67	88.8
Neutrophils	78.7	69	89.8
Eosinophils	0	1	0
Basophils	0.1	0	0.2
Typical lymphocytes	15.7	28	8.5
Atypical lymphocytes	0	0	0
Monocytes	5.5	2	1.5
Platelets	79000	104.000	289.000
pH	7.36		7.40
pCO2	36.1		64.8
pO2	154.5		217.1
HCO3	20.1		39.3
CO2T	22.0		41.2
BE	-4.6		12.2
Saturation	99.2%		99.8%
Total bilirubin		0.26	
Direct bilirubin		0.14	
Indirect bilirubin		0.12	
RT-PCR	Positive	Negatives (2 Tests)	
Total proteins			5.84
Albumin			3.69
Globulin			2.15
Ratio			1.72



Figure 1. Radiological exams: 04/28/2020-Admission to the Pediatric ICU.

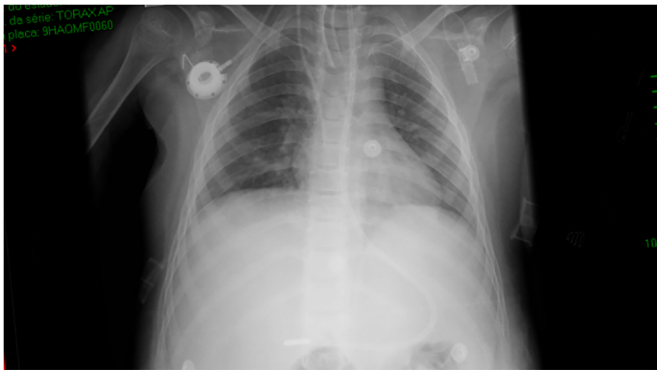


Figure 2. Test 05/23/2020-post-tracheostomy.

was made due to a radiological characteristic and confirmed by RT-PCR. There was no previous history or symptoms. Only on the 2nd day of hospitalization did the father report having severe discomfort on the 12th day prior to hospitalization (04/16); with improvement after symptomatic drugs, and his contact person showed only gastrointestinal symptoms on 04/19, which can happen with COVID-19 infection, as per reported in the literature[15]. The father and the contact person did not receive tests for COVID-19 and were asymptomatic, as well as the mother. According to the literature, transmission occurs within the home to the pediatric public in 82%[2] as was the case, since the patient was in home isolation due to the pandemic and his general condition. The patient had a fever peak of 38°C upon admission, increased D-dimer, quantitative CRP and DHL, decreased platelets, similar to the literature[2,4,8,9]. Epidemiological data from China point to a median age of 7 years and 56.6% of male patients, as in the case reported[11].

Due to the lack of semiological data and mild clinical pictures upon admission, it is necessary to protect the healthcare team with personal protective equipment, to have COVID-19 as a differential diagnosis, to respect the decision of family members regarding terminal care and to request support from the palliative care/terminal team to support the patient and family members so as not to cause dysthanasia.

We ran a PubMed search using the terms: "children" + "coronavirus-19" + brain tumor "or" choroid plexus carcinoma "or" clinical characteristics "or" complications ". With this, we found no COVID-19 publications in patients with choroid plexus carcinoma. What stands out in this case is that the patient evolved stable, despite all comorbidities, and we question whether the continuous use of dexamethasone reduced the COVID-19inflammatory process.

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