

Case Report

COVID-19 Infection and Cervical Abscess in a Three-Month-Old Infant

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Background

After one year since the first reported cases of COVID-19 infection, many aspects of its pathogenesis are still unclear and have to be better defined.

Beyond the respiratory aspects of the infection, which have been largely reported and described, the attention has been recently focused on the extrapulmonary manifestations, considering the SARS-CoV-2 infection as a systemic disease. In this wider perspective of the infection, the Angiotensin-Converting Enzyme 2 (ACE2) plays a crucial role since it is expressed in different organs - such as kidney proximal tubule, myocardium, and endothelium - and it can be the key factor of the extrapulmonary manifestations [1-4]. Recently some authors reported about SARS-CoV-2 infection and concurrent abscess development, in particular peritonsillar [5], retropharyngeal [6] and parapharyngeal [7] abscesses and an increase in the incidence of epidural ones as well [8]. These complications have been related to either an immunosuppressive state, induced by the virus, which favored opportunistic infections [6,9] or to an endothelial damage directly induced by the virus which favors the bacterial invasion [8]. Nonetheless, none of these cases were reported to affect pediatric patients.

Case Presentation

A three-month-old infant was referred to the Emergency Department with fever, irritability and right cervical/submandibular lymphadenitis with a local cutaneous hyperemia. No other relevant signs or symptoms were detected and no perinatal neither postnatal complications were reported. General conditions and life parameters were good.

At the admission, the nasopharyngeal swab tested positive for SARS-CoV-2 infection.

Abstract

A three-month-old infant was referred to the emergency department with fever and a right cervical abscess. Nasopharyngeal swab was positive for SARS-CoV-2 infection. Main causes of infectious abscess and immunodeficiency disorders were ruled out. After a surgical drainage and an antibiotic therapy, clinical conditions of the infant improved, and *Staphylococcus Aureus* was found in the wound drainage culture. This is a possible, not yet described in infant patients, concurrent clinical manifestation of SARS-CoV-2 infection.

Keywords: COVID-19; Infant; Pediatric; Abscess; Drainage

Investigations

Blood tests showed neutrophilic leukocytosis, thrombocytosis and a C Reactive Protein (CRP) increase (Tab.1). A Mantoux test was negative as well as serological tests for Epstein Barr Virus, Cytomegalovirus and *Bartonella Henselae*.

The ultrasound examination showed some inflammatory hypoechoic and rounded lymph nodes without colliquative spots in the right upper cervical region.

Serum IgG, IgA and IgM were within normal limits, as well as levels of RTE (Recent Thymic Emigrants), helper T, cytotoxic T, Natural Killer (NK) and B lymphocytes. Furthermore, superoxide dismutase (SOD) function was normal.

Treatment

Intravenous antibiotic therapy with amoxicillin-clavulanate was started. The patient soon became less irritable and both fever and the abscess dimensions gradually decreased. Nonetheless, ultrasound examination showed a homogeneous and avascular formation, of the size of 3x3 cm, suggesting a colliquative degeneration. Another lymph node in the surroundings was partially colliquate and further reactive homolateral lymph nodes were found. The derma next to the formation was thickened and suggesting for cellulitis. Clindamycin was added to the therapy, as well as dexamethasone and a slight intravenous hydration. During the whole hospital stay the baby was breastfed and her weight increased regularly.

At the sixth day since the initial manifestation, the abscess was drained surgically under general anesthesia. A purulent material was collected for culture examination and *Staphylococcus Aureus* was found. The cavity was washed with saline solution and then the wound was covered with a medicated gauze and a semi-compressive dressing.

Soon after the drainage, laboratory findings improved (Table 1).

Table 1: Blood tests at admission and during the hospital stay.

	Admission	5 days after admission	1 day after drainage	Discharge
WBC (x10³/μL) Range: 6,00-18,00	17,10	20,26	6,81	10,27
N (x10³/μL) Range: 1,50-8,50	8,38	11,20	4,62	2,29
L (x10³/μL) Range: 4,00-10,50	5,99	7,21	1,97	6,36
M (x10³/μL) Range: 0,10-1,00	2,22	1,52	0,21	1,19
RBC (x10⁶/μL) Range: 4,00-5,40	3,35	3,42	2,93	3,36
Hb (g/dL) Range: 9,5-13,5	9,4	9,6	8,2	9,5
MCV (fL) Range: 90,00-100,00	80,5	82,1	86,0	84,2
Ht (%) Range: 33,0-43,0	27,0	28,2	25,2	28,3
PLT (x10³/μL) Range: 150-450	628	563	529	486
CRP (mg/L) Range: <5,0	2	1,7	6,3	1,8
Creatinine (mg/dL) Range: 0,26-0,55	0,22	0,23	0,16	0,21
Na⁺ (mEq/L) Range: 135-145	134	130	140	139
K⁺ (mEq/L) Range: 3,50-5,10	4,30	4,00	4,09	4,12
Cl⁻ (mEq/L) Range: 98-110	99	97	107	104

WBC: white blood cells; N: neutrophils; L: lymphocytes; M: monocytes; RBC: red blood cells; Hb: hemoglobin; MCV: mean corpuscular volume; Ht: hematocrit; PLT: platelets; CRP: C reactive protein.

After ten days of intravenous antibiotic the patient was discharged.

Discussion

To our knowledge this is the first case report of a cervical abscess during SARS-CoV-2 infection in an infant patient. In particular, in this patient the abscess and the fever were apparently the only clinical manifestations and no other symptoms usually related to COVID-19 infection were present.

While further studies are needed to investigate the effective link between SARS-CoV-2 infection and the development of bacterial abscesses and its pathogenesis, pediatricians should be aware of this possible link in children as well.

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