Acute acro-ischemia in the child at the time of COVID-19.

Mazzotta F., Troccoli T.
Dermatologia Pediatrica, Bari, Italy

Summary

5 weeks after the diagnosis of the first autochthonous case of COVID-19 in Italy - February, 2020 - the authors reported that children and adolescents otherwise in good health were suffering from acroischemic foot lesions. The lesions, which were reminiscent of chilblains, were often painful and evolved within a few weeks with restitutio ad integrum. The lesions were probably the expression of vascular disorders related to SARS-CoV-2 infection.

Keywords

Vasculitis, COVID-19, epidemic, child.

After China, Italy was the first nation in Europe to face SARS-CoV-2. If the respiratory symptoms were the most severe, doctors soon realized that the new virus was able to strike anywhere. As with other viruses, the skin participated in the infection with various types of rash, urticaria, polymorphic erythema, etc. In the current work, characteristic chilblain-like lesions were described in a child whose family history suggested a contagion with SARS-CoV-2.

Case report

A 13-year-old boy suddenly presented poorly symptomatic foot lesions on March 8, 2020. The clinical features, which were observed and documented by the pediatrician, consisted of 5-15 mm in diameter, erythematous and violet, rounded lesions with blurred limits on the plantar surface of the 1st right toe (Fig. 1) and on the dorsal surface of the 2nd toe both on the right and left foot. The boy had not taken any drug because he had no symptoms on other organs. After 2 days he presented general phenomena – fever at 38.5 °C, muscle pain, headache and intense itching and burning on the foot lesions –. Meanwhile, an about 1 cm in diameter blister with a tense roof and serous content formed on the lesion of the left 2nd toe (Fig. 2). A plastic surgeon was consulted who advanced the hypothesis of violin spider bites and prescribed an oral macrolide and topical therapy. After 7 days from the beginning, the lesions persisted assuming a purpuric aspect (Fig. 3) that worsened further in the following days (Fig. 4) with the formation of blackish crusts (Fig. 5). After a few days, the pain and the cutaneous lesions began to regress.

Since in those days began to circulate in Italy on social networks and in particular in the pediatric dermatology forum “Amici DermPed” images of acrolocated ischemic lesions, especially in the feet of children with suspected COVID-19 we investigated the family history. The latter highlighted how the patient’s mother and sister had both presented fever, cough and dyspnea 6 days before the appearance of his foot lesions. The suspicion of COVID-19 was therefore also raised for the boy. Unfortunately, it was not possible to confirm the suspicion of COVID-19 due to the emergency situation present at that time in Italy.
Discussion

From the beginning it was evident that the severity of COVID-19 (COronaVIrus Disease 19) correlated with the age and presence of comorbidity: in a large Chinese study on 44,672 confirmed cases, subjects from 0 to 10 years were represented for 0.9% and those from 10 to 19 for 1.2% (3); half of the children had no obvious symptoms making their identification difficult for epidemiological purposes (4). Various hypotheses have been put forward to explain the lower incidence and lower severity in these age groups (2).

In Italy the first autochthonous case of COVID-19 was diagnosed on February 20, 2020. Since then the disease spread rapidly throughout Italy even though the outbreaks of greater intensity remained localized in Lombardy, Veneto, Emilia Romagna.

Doctors, along with nurses and all healthcare workers, have been at the forefront of the fight against COVID-19. In addition to resuscitators, infectious disease specialists and pulmonologists, all Italian doctors have played a role in this war and to date 80 of them have died from COVID-19. Dermatologists have been involved in this war due to the lack of specialists both in triage stations and in hospital wards (5).

Despite the limitations due to the emergency, they attempted to understand what the skin manifestations were in COVID-19 and what meaning they had. In the first study on this topic (5) 18/88 (20.4%) patients with COVID-19 who had not taken any drug in the previous 15 days presented skin manifestations, in particular erythematous rash in 14 cases, urticaria in 3, varicelliform exanthema in 1; the Author also pointed out that in 8 cases the skin manifestations had appeared at the onset, in 10 cases during hospitalization.
Acute acro-ischemia in the child at the time of COVID-19

These data are not surprising because erythematous rash and urticaria are not uncommon in other viral infections; the rarest is the varicelliform exanthem, that occurred in a dermatologist patient.

When on March 29, 2020, 5 weeks after the first Italian case of COVID-19, the first report of acro-ischemic lesions in asymptomatic children appeared, there was a common confirmation throughout Italy with the report in a week of a few dozen cases and new cases were reported every day. The lesions occurred in children and adolescents, however, in good health; they mainly affected the feet and sometimes the hands; the toes and fingers were typically affected, but in some cases also the plantar region; the lesions affected not all toes and fingers, on average 3, often separated by unaffected toes and fingers; the lesions were sometimes rounded, a few millimeters in size and multiple as in figure 1 or affected the entire toe usually with a clear demarcation at the metatarso-phalangeal level.

Initially the lesions had a reddish-purple or bluish color; they could become bullous or present blackish crusts in the subsequent evolution; they were usually painful and evolved within 2-3 weeks with restitutio ad integrum.

These morphological data are the only reliable data because the examined cases had been collected via WhatsApp; we do not have an age distribution but it is a pediatric case series and generally it concerns children towards the end of the first decade or teenagers; we don’t have a gender distribution. We do not always have a family history; due to the emergency situation we live in we do not have laboratory tests, we have no swab results. However, in two of these typical cases the SARS-CoV-2 swab was positive. It is therefore a paleodermatological series, exclusively based on morphology. However, in recent decades we have never seen two such exceptional events at the same time: a viral epidemic with a mortality rate of 10% of swab positive subjects and an epidemic of acroischemic lesions of some toes and fingers in asymptomatic children and adolescents.

These acute self-healing acroischemic lesions are different from other chronic conditions such as acrocyanosis, perniosis, Schoenlein-Henoch type vasculitis and are not as severe as those of meningococcal sepsis and protein C deficiency (1); however, they could be the expression of secondary microthrombosis due to endothelial damage and vascular disorders. The only report in the literature of a relationship between lesions of this type and COVID-19 (6) describes the association between coagulation disorders and acroischemia manifesting with cyanosis, blisters and gangrene of fingers and toes in severe cases of COVID-19.

If further observations and laboratory data will confirm that we are facing a clinical sign of COVID-19, this dermatological sign could be useful for identifying children and adolescents with minimal forms of infection, but potential sources of further infection.
Acknowledgments: we thank the colleagues of the “Amici DermPed” Forum who first reported the skin manifestations. We also thank the doctors Francesca Baisi and Laura D’Aloisio who sent the clinical case images via WhatsApp.

Address to:
Dr. Francesco Mazzotta
Dermatologia Pediatrica
Via Bitritto 131 - 70124 Bari, Italy
e-mail: cetromazderm@libero.it

References