

ACUTE ACRO-ISCHEMIA IN THE CHILD AT THE TIME OF COVID-19

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Case report. A 13-year-old boy suddenly presented poorly symptomatic foot lesions on March 8, 2020. The clinical features observed and documented by the pediatrician consisted of 5-15 mm in diameter, erythematous-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 had 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 that 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 has not yet been possible to confirm the suspicion of COVID-19 due to the emergency situation present at this time in Italy.



Fig. 1



Fig. 2



Fig. 3



Fig. 4



Fig. 5

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 the 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 has spread rapidly throughout Italy even though the outbreaks of greater intensity have remained localized in Lombardy, Veneto, Emilia and 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 are in COVID-19 and what meaning they have. 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 points out that in 8 cases the skin manifestations had appeared at the onset, in 10 cases during hospitalization. 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 are reported every day. The lesions occur in children and adolescents, however, in good health; they mainly affect the feet and sometimes the hands; the toes and fingers are typically affected, but in some cases also the plantar region; the lesions affect not all toes and fingers, on average 3, often separated by unaffected toes and fingers; the lesions are sometimes rounded, a few millimeters in size and multiple as in Figure 1 or affect the entire finger usually with a clear demarcation at the metatarsophalangeal level; initially they have a reddish-purple or bluish color; they can become bullous or present blackish crusts in the subsequent evolution; they are usually painful and evolve within 2 weeks with *restitutio ad integrum*. These morphological data are the only reliable data because the case studies have 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, but 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 acro-ischemia 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.

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