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Case Report

Very Early Development and Recognition of Coronary Involvement in a Febrile Infant with Typical Signs of Kawasaki Disease

D. Buonsenso[1], S. Cristaldi[1], A. Reale[1], I. Tarissi de Jacobis[2], L. Granata[2] and A. Marchesi[2].

[1] Pediatric Emergency Department, Bambino Gesù Children's Hospital, Institute for Research and Health Care (IRCCS), Rome, Italy.
[2] Pediatric and Infectious Disease Unit, Bambino Gesù Children's Hospital, Institute for Research and Health Care (IRCCS), Rome, Italy.

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Abstract. Kawasaki disease (KD) is an acute, self-limited, inflammatory disease affecting medium-sized arteries and particularly the coronary arteries in about 25% of untreated cases. KD is a clinical diagnosis based on the presence of ≥5 days of fever and the presence of ≥4 of the 5 principal clinical criteria. We described, for the first time to our knowledge, a case of a very early development (on day 1) of typical KD with transient coronary involvement, diagnosed on day 2 of disease and treated with aspirin and steroids on day 3, with complete resolution of clinical signs and coronary involvement.

Keywords: Kawasaki disease, Coronary artery.

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Correspondence to: Danilo Buonsenso, MD. Catholic University of Sacred Heart - A. Gemelli Hospital, Department of Pediatrics, Pediatric Infectious Disease Unit, Largo A. Gemelli 8, 00168 Rome, Italy. E-mail: danilobuonsenso@gmail.com

Case. A 4-month-old, Italian, male infant came to our emergency department because of fever since 24 hours and rash since 6 hours. A few hours before our evaluation, the child had been evaluated by his family doctor who suspected a urinary tract infection and prescribed urine analyses. The child received the first immunization as for his age and no drugs taken before the admission.

The child was suffering and irritable, the physical examination revealed a polymorphous skin rash involving mainly the genital area, feet and hands edema without palmar skin rash, non-purulent bilateral conjunctive injection and important cheilitis characterized with an intense lips redness and cracking.

Complete blood count revealed White Blood Cell Count of 11,150/mmc (N 46%, L 34.3%), Platelets 291000/mmc, C-reactive protein was 5,78 mg/dL (normal value < 0.5), Procalcitonine was within normal range for age, LDH 542 UI/l, fibrinogen 550 mg/dl.

Despite some clinical findings were consistent with Kawasaki Disease (KD), the child presented fever since only 24 hours, therefore blood and urine and liquor cultures were taken and empiric broad-spectrum antibiotic therapy was started. Urinalyses were normal with no pyuria, no esterase nor nitrites. Cerebrospinal fluid chemical results were normal, no pleocytoss. The next morning the child was admitted to the Pediatric and Infectious Disease Unit of our Hospital. In the pediatric unit other common viral infections were ruled out (herpes virus, Epstein-barr virus, coxsackie virus, enterovirus, adenovirus, measles).

24 hours later (48 hours from fever onset), due to the persistence of fever and clinical signs suspicious for KD, echocardiogram was performed and mild dilatation of the common trunk (26 mm, Z-score: 3) and the proximal tract of the anterior descending left coronary artery (17 mm; Z-score 2.4) documented. The right coronary artery was within normal ranges but showed mild hyperecogenicity of the proximal tract.

Therefore, although in third day of illness, treatment with intravenous immunoglobulin at the standard dose of 2 g/kg in 12–18 hours and metildprednisolone was started. Low-dose aspirin (5 mg/kg) was started as well; the patient achieved a complete fever resolution in 24 hours. On the fifth day of disease, echocardiogram was repeated and showed stable findings. On the 12th day, a new echocardiogram was performed and showed complete normalization of coronary findings. The child was then discharged in good clinical conditions with no signs or symptoms, with no problems to highlight a 2 months of follow-up.

Discussion. We described the case of a young infant who developed in only 24 hours all typical signs and symptoms of KD with coronary artery transitory involvement.

Kawasaki disease is an acute, self-limited, inflammatory disease of unknown etiology. It is associated with vasculitis, mainly affecting medium-sized arteries and particularly the coronary arteries in about 25% of untreated cases, being the most common cause of acquired heart disease in children in developed countries.[1-3]

KD is usually observed in children less than 5 years in over 80% of cases,[4] but there are described cases in neonates, teenagers, and even in adults.[5]

KD is a clinical diagnosis based on the presence of ≥5 days of fever (first calendar day of fever is illness day 1) and the presence of ≥4 of five principal clinical criteria (extremity changes, rash, conjunctivitis, oral changes and cervical lymphadenopathy).[6]

In presence of > 4 main clinical criteria and/or presence of coronary arteries involvement, the diagnosis can be made within 4 days of fever. Nevertheless, the clinical features are typically not all present at a single point in time, and it is generally not possible to establish the diagnosis very early in the course.[7] Similarly, experienced clinicians who have treated many KD patients may make the diagnosis in rare instances with only 3 days of fever in the presence of a classic clinical presentation. Typically, the clinical features are not all present at a single point in time, and it is generally not possible to establish the diagnosis very early in the course. Similarly, some clinical features may have abated in patients who present after 1 to 2 weeks of fever, and a careful review of prior signs and symptoms can help establish the diagnosis.[7]

Obviously, to reach an early diagnosis or a late one when other signs or symptoms disappeared, other diagnosis should be ruled out, including viral infections.[8]

Unusually, our patient developed all clinical signs of typical KD in only 24 hours and already at 36 hours from fever onset (day 2 of disease) developed coronary dilatation (small aneurysms (Z Score ≥2.5 to <5) according to current guidelines).[7]

The very early diagnosis allowed the early treatment with IGIV and steroids, with rapid resolution of fever and the requirement of addition therapy, and resolution of coronary involvement within seven days.

Although corticosteroids are the treatment of choice in other forms of vasculitis, their use has been controversial for children with KD.[9] Patients believed to be at high risk for development of coronary artery aneurysms (as in our case since the child already developed small aneurisms at 23 hours of disease) may benefit from primary adjunctive therapy.[7] In particular, a recent study found that an early coronary dilatation was independently associated with the occurrence of progressive coronary dilatation and therefore in these cases adjuvant therapies apart from immunoglobulin therapies may benefit the outcome.[10]

A recent meta-analysis evaluated nineteen studies published between 1999 and 2016.[11] There was a significant reduction in incidence of coronary artery involvement with usage of corticosteroid with a pooled odds ratio of 0.72 (95% CI 0.57e0.92; p Z 0.01) than that without usage of corticosteroid. In general, a greater effect was seen in the patient received corticosteroid as initial and adjuvant therapy with intravenous immune globulin (pooled odds ratio 0.39, 95% CI 0.21e0.73, p Z 0.007) than those who received corticosteroid as rescue therapy.

Some authors postulated that very young infant with incomplete KD might experience an asymptomatic or pauci-symptomatic disease course secondary to the presence of passively acquired maternal antibodies, in the hypothesis that an unknown infectious agent[6,12] may trigger KD.

Despite some published case reports support this hypothesis, our case seems to contradict it since he rapidly developed all typical signs and symptoms of KD with coronary involvement in less than 48 hours. To our knowledge, this is the first described case with such a rapid development and diagnosis of KD.

Conclusions. We described, for the first time to our knowledge, a case of a very early development of typical KD with transient coronary involvement, highlighting the multiform potential clinical presentation of KD, a syndrome better described as a clinical spectrum other than a classic disease, due to its variability from standard disease to very severe or even asymptomatic cases. This case may also help other clinicians to support the diagnosis of KD in such a short time when typical signs and symptoms are present, even with only 36-48 hours of fever.

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