



Measles Complicated with Macrophagic Activation Syndrome: A Case Report

Fatima Taher, Soumia Mrhar, Karima El Fakiri, Nouredine Rada, Ghizlane Draiss, Mohammed Bouskraoui

Pediatric A Department, Mohammed VI University Hospital, Marrakesh, Morocco

Email: taher.fatima01@gmail.com

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Abstract

Measles is one of the most contagious infectious diseases and is a public health problem because of its high death rate, especially in young children. In most cases, measles is responsible in moderate forms, but it can be responsible for complications mainly respiratory and neurological. Macrophagic activation syndrome secondary to measles has been rarely reported in the literature. We report in this article the case of a 3 years old child who presented a macrophagic activation syndrome after measles, treated with boluses of methylprednisolone with good evolution.

Subject Areas

Pediatrics

Keywords

Child, Measles, Macrophagic Activation Syndrome, Steroid Pulse Therapy

1. Introduction

Macrophagic activation syndrome (MAS) or lymphohistiocytic activation syndrome, is a rare but potentially fatal disease. There are two entities the so-called “primary” MASs, grouping hereditary diseases of the immune system and secondary MASs for which no notion of family involvement is found, affecting older children or adults. They occur during neoplastic, autoimmune or infectious conditions [1].

Measles is one of the most contagious infectious diseases, which is a public health problem because of its death rate, especially among young children. The World Health Organization (WHO) defines measles as anyone with a fever,

maculopapular rash, cough, coryza or conjunctivitis [2].

In most cases, measles is responsible in moderate forms, but it can be responsible for mainly respiratory and neurological complications [3].

In this article, we report the case of a child with MAS secondary to measles, after free and informed consent of the parents. Thus, we highlight the interest in early diagnosis and management in improving prognosis.

2. Observation

Child of 3 years and a half, vaccinated according to the national immunization program, with no special history, hospitalized for measles retained in front of a morbiliform rash, preceded 4 days before a fever of 40° with an alteration of the general condition, without oculo-respiratory catarrh or cough. The rash began behind the ears and then the face, extending downwards to the neck and then to the shoulders, chest, upper limbs and abdomen and lower limbs. The lesions were generalized maculopapular, of different sizes and irregular contours, more at least confluent with intervals of healthy skin without purpuric lesions or skin detachment.

Clinical examination objective bilateral conjunctivitis, occipital lymphadenopathy and submandibular left infracentimetric, the Koplick sign was negative.

The diagnosis of measles was strongly suspected and confirmed by positive IgM and negative IgG serology. The patient received symptomatic treatment for fever with vitamin 200000IU daily for two days.

The evolution was marked by the persistence of fever on the 8th day of the eruption with alteration of the general condition. The biological assessment was a bi-cytopenia to the hemogram (anemia at 10 g/dl and thrombocytopenia at 91000), hyperferaritinemia at 3134 ng/L, LDH elevated to 3432 U/L, hypertriglyceridemia at 2.48 g/L, hypofibrinogenemia at 0.5 g/L. The diagnosis of a macrophagic activation syndrome secondary to measles was retained. The patient was treated with 3 bolus corticoïdes at 30mg/kg/d for 3 consecutive days. The evolution was marked by a clinical improvement with gain of 24H apyrexia after the start of treatment and normalization of the biological balance.

3. Discussion

Measles is a very contagious disease, it often passes without serious but it can lead to complications sometimes serious or even fatal. According to the WHO, measles is one of the leading causes of death among children under 5 in many African countries [4].

According to the WHO, although measles vaccination has reduced the number of cases by 79%, and the number of deaths by 94% in the period 2000-2022, there have been recent outbreaks of measles in countries in the African region [5].

In Morocco, the Extended Vaccination Programme (EPI), supported by WHO and UNICEF, was introduced in 1981 and led to a significant decrease in the incidence of measles, thanks to vaccination coverage that reaches 96% [2].

The diagnosis must always be suspected, because of the current epidemic status of measles in front of any febrile maculopapular rash, even in vaccinated children. Its evolution is often spontaneously favorable but complications can appear such as pneumonia, digestive disorders or otitis, encephalopathy, or MAS [6].

The macrophagic activation syndrome secondary to measles has been rarely reported in the literature, its pathophysiological mechanism is still unclear [7], among the hypotheses it is the uncontrolled activation of macrophages by gamma interferon, increased during measles, and which causes haemopagocytosis [8] [9].

All the cases described in the literature had a respiratory impairment [7] which is the particularity of our case which had no respiratory signs.

The diagnosis of MAS in our patient was based on the combination of clinical and biological criteria of SAM published in 2004 [10].

The prognosis of secondary MAS depends on early diagnosis and treatment. Vitamin A deficiency is described as a risk factor for severe forms of measles with ocular involvement that can lead to corneal perforation and blindness [11]. Since 1987 WHO and UNICEF have recommended vitamin A treatment for children with measles [11]. The protocol used is one dose per day for two days at doses of 50,000, 100,000 and 200,000 IU for children under 6 months of age, between 6 and 11 months and 12 months respectively [12].

We treated the patient with bolus corticoides to act on the state of hyperinflammation. This is consistent with other studies reported in the literature that recommend high-dose utilization of corticoides and or front-line immunoglobulins for improved clinical signs as well as biomarkers [7] [13].

Although the measles vaccine has been successful in significantly reducing morbidity and mortality due to this disease, measles can rarely be caught, essentially in children who received a single dose as those who received a complete vaccination with two doses. According to a study published in Cochrane, the vaccine's efficacy in preventing measles was 95% after one dose and 96% after two doses [14], hence the value of recommending the second vaccine dose and increasing vaccination coverage.

4. Conclusion

Macrophagic activation syndrome secondary to measles is a very rare entity, and according to the case we have presented, its diagnosis should be considered in all cases of measles with persistent fever and favorable biological workup to initiate early management that conditions the prognosis. Thus, the high rate of vaccination coverage with two doses is the pillar of prevention to prevent the circulation of the virus, hence the interest to intensify efforts to strengthen the collective immunity.

Conflicts of Interest

The authors declare no conflicts of interest.

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