Mediterranean spotted fever in Algerian children

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Mediterranean spotted fever (MSF) is a potentially life-threatening zoonosis caused by Rickettsia conorii and transmitted by the brown dog tick Rhipicephalus sanguineus [1]. Although MSF is one of the oldest recognised rickettsioses, there have been few reports about this rickettsiosis in North Africa [1,2]. The present work on MSF cases occurring in children is a subset of a larger study conducted within all age categories.

PATIENTS AND METHODS

Patients younger than 15 years old who were seen at the Oran Teaching Hospital in 2004–2005 with suspicion of rickettsioses were prospectively included in this study. Informed consent was obtained from all parents. For each child, the study involved obtaining an acute-phase serum sample within 2 weeks of the onset of the symptoms and, when possible, a convalescent-phase serum sample. IgG and IgM antibody titres were estimated by an immunofluorescence (IF) assay, using 10 rickettsial antigens [2]. When cross-reactions were noted between several rickettsial antigens, Western blotting and cross-adsorption studies were used to complement the IF assay [2].

RESULTS

A total of 36 children were included in the study. Most of them (75%) were taken to healthcare providers before being seen at the Oran University Hospital. During a previous consultation they were prescribed a first-line antibiotics regimen, in particular amoxicillin (56%) or amoxicillin-clavulanate (22%); a few of them also received penicillin G, erythromycin, spiramycin or cotrimoxazole.

A total of 24 cases were diagnosed as MSF. Most (16 children) of them were encountered in July (seven cases) and August (nine cases). The median age was 4.5 years old (15 days to 14 years old). A history of tick-bite was given in nine (37.5%) cases. Contact with dogs was reported in 20 (83.3%) cases. Patients were seen at the hospital after a median of 6 days (range 3–10 days) of fever.

All children but one had fever (Table 1). A rash was observed in all the children but one. It was maculopapular and included the palms and soles in 23 (92%) of the cases. One child had a petechial rash. An inoculation eschar was observed in 20 (83.3%) children. In the majority (16/20) of the cases it was localised in the cephalic region (retroauricular, the lobule of the ear, scalp). For four other children, it was respectively localized on the trunk, on the buttocks, in the inguinal area, and between two toes. Eighteen patients (90%) presented with a single eschar, while two patients presented with two eschars. Two children presented with seizure and were considered as a severe form of MSF. Leucopenia was found in eight cases (33.3%), leucocytosis in five (20%), thrombocytopenia in four cases (16.6%) and anaemia in 16 cases (66.6%).

Intravenous chloramphenicol was used as a first-line drug in eight children who presented with vomiting. It was switched to oral josamycin (macrolid, five cases), doxycycline (two cases) or thiopephenicol (one case). The 13 other children received josamycin as a first-line oral regimen.

DISCUSSION

We report here the largest prospective study conducted on MSF in children in North Africa. Although other spotted fever group rickettsioses exist in Algeria [1], our cases have been confirmed...
to be caused by *R. conorii* using immunofluorescence methods completed by Western blot and cross-absorption studies. Cases were encountered in the summer, a classic pattern for MSF [1], because *Rh. sanguineus* ticks are highly active and more aggressive during the warmest months. Of interest, two children presented with two eschars. This is quite unusual in MSF, for which the typical inoculation eschar at the tick-bite site is usually unique [1,2]. However, particular climatic circumstances, including higher temperature, that were reported in Oran in recent years, may have led to an increased proclivity of ticks to bite humans (Parola *et al.*, unpublished).

Although 62.5% of the children in the present series were hospitalised, only two (those with seizures) were considered to have a severe form. During the same period in Oran, cases were particularly severe in adults; 49% of 167 patients diagnosed with MSF were hospitalised with a severe form [2]. Therefore, cases of MSF seem to be milder in children than in adults. Also, in adults, the eschar is most often observed on the trunk and legs [2]. Herein, the eschar is frequently localised on the cephalic area, even in babies who were not of walking age.

When they initially sought medical care, children were prescribed drugs that were ineffective to treat rickettsioses. It should be remembered that doxycycline remains the treatment of choice for all patients, including young children with life-threatening rickettsioses [1]. The risk of dental staining by doxycycline is negligible when a single, relatively short course of therapy is administered. Chloramphenicol continues to be used as the empirical parenteral treatment of severe cases if it is the sole available drug or in children presenting with vomiting and lack of intravenous doxycycline. Josamycin can be used in children, but newer macrolides are also of interest, particularly azithromycin [1]. MSF seems to be still misdiagnosed in children as other eruptive febrile diseases. The consequences of this include delays in appropriate therapy and a risk of a severe form and even a fatal outcome.

**REFERENCES**


