Brazilian spotted fever in the paediatric age-segment in the State of São Paulo, southeastern Brazil, 2003–2006
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INTRODUCTION

Brazilian spotted fever (BSF) is an acute febrile tick-borne disease caused by *Rickettsia rickettsii*. First described in 1929, initially it was seen as an adult disease. Since its re-emergence in 1985, the expansion of transmission to peri-urban areas has brought children into contact with the main tick vector, *Amblyomma cajennense*.

In general, it has two distinct clinical phases. In the early stage there is a non-specific febrile syndrome, with headache, myalgia, nausea, vomiting and abdominal pain, followed by a maculopapular exanthem in almost 50% of patients. Around day 6 of symptoms, a petechial exanthem, haemodynamic instability, respiratory distress and neurological disorders define a life-threatening disease, usually associated with multi-organ failure and a high case-fatality.

For this reason, early clinical suspicion and treatment are necessary to reduce morbidity and mortality. The increasing number of infected children, especially after the re-emergence of BSF since 1985, is of particular concern.

We describe the main clinical and epidemiological aspects of BSF in the paediatric age-segment.

PATIENTS AND METHODS

Retrospective analysis of surveillance records kept by the State Health Department of São Paulo state, southeastern Brazil, was carried out. The population studied was BSF confirmed cases (by indirect immunofluoresence assay in serum, *Rickettsia* isolation in cell culture, and/or immunohistochemistry) aged 0–17 years old, between 2003 and 2006.

RESULTS

A total of 5949 BSF suspected cases were notified during the period, and 206 were confirmed. In the 0–17 years old segment, there were 2476 suspected cases and 60 BSF confirmed or compatible cases (44 were confirmed by laboratory tests, three confirmed by clinical-epidemiological criteria, and 13 presented with clinical signs compatible with BSF and a positive IFA, however without four-fold increased titres). The median age was 9 years (range 1–16 years) and 60% were male. Of 44 BSF laboratorial-confirmed patients, in 81.8% the confirmation was made by four-fold increased titres in paired serum samples by IFA, in four patients (9.1%) by *Rickettsia* isolation, and in four (9.1%) by immunohistochemical analysis of post-mortem tissues.

*Rickettsia* exposure was probably as a result of: tick exposure (51.7%), tick exposure and contact with animals (areas with horses, capybaras and/or dogs) (21.7%), contact with animals (6.7%), contact with vegetation (rural, forest and/or waterside areas) (3.3%). In 16.7% a risk factor for infection could not be identified.

Clinically, non-specific symptoms included: fever (90%), headache (91.7%), myalgia (85%), prostration (56.7%), abdominal pain (45%), nausea and/or vomiting (45%), exanthem (40%), diarrhoea (21.7%), conjunctival hyperaemia (21.7%), hepato- and splenomegaly (13.3%), and lymphadenopathy (8.3%). Severe manifestations, usually associated with a more severe disease, were also observed in a high proportion: icterus (13.3%), petechiae and/or haemorrhagic suffusions (40%), other haemorrhagic manifestations

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(26.7%), hypotension and/or shock (18.3%), neurological manifestations (coma, 10%; convulsions, 5%), respiratory distress (8.3%), and acute renal failure (6.7%). The case–fatality proportion was 28.4%.

DISCUSSION

Almost one-third of all confirmed cases in the state of São Paulo belong to the paediatric age segment. Despite a lower case-fatality observed in this age-specific group when compared with the general population (30% compared with 41.9%) [1], BSF remains a health problem in Brazil.

The risk of transmission was associated with rural and water-side areas, with frequent presence of animals such as horses, dogs and capybaras. These risk factors were previously reported in other case-series [2].

In the early stage, BSF is a differential diagnosis of exanthematic febrile syndrome, but the rapid progression to a life-threatening disease is usual.

In this case-series exanthem was observed in less than 50% of patients, much less than observed among Rocky Mountain spotted fever (RMSF) patients [3].

One possible explanation could be an incorrect inclusion of data in notification files. Another cause to be postulated is the misperception of exanthem in dark skin patients, who make up a significant percentage of the population in Brazil. The low frequency of exanthem was also observed previously, including in a case-series of hospitalised BSF patients [1].

As mentioned previously, BSF seems to be a more severe disease when compared with RMSF [1]. Possible causes of this observation are the late diagnosis with consequent delay in specific therapy introduction, and the use of chloramphenicol as the only drug for parenteral use in severe cases, despite much epidemiological and in vitro evidence for the superiority of tetracyclines for R. rickettsii treatment [4]. Another explanation for the higher BSF morbidity and mortality that must be considered is the possible higher virulence of R. rickettsii in Brazil.

In Brazil, the frequent association of fever, shock and petechiae/haemorrhagic suffusions (Fig. 1), makes BSF an important differential diagnosis of other acute purpuras, with special attention to meningococcal disease.

For this reason, the improving early suspicion and the recommendation of early introduction of specific treatment should be a priority, in all ages, even when tick exposure has not been reported or exanthem is absent.

In Brazil, chloramphenicol remains the first choice for treatment of BSF in the paediatric age segment. Because of the possible association between its use and a higher risk of R. rickettsii-related deaths, the recommendation of doxycycline should be underscored in all BSF suspected cases.

REFERENCES