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Clinical and laboratory features of murine typhus in central Tunisia: a report of seven cases

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Summary

Introduction: Murine or endemic typhus, caused by *Rickettsia typhi*, has been reported in all continents. In the 1970s, no cases of murine typhus were diagnosed in Tunisia.
Methods: The clinico-epidemiological characteristics of seven cases of murine typhus diagnosed at our hospitals since 1993 are reported. Diagnosis was confirmed by indirect fluorescence assay detecting specific *R. typhi* antibodies.
Results: Murine typhus occurred in all ages from 18—80 years during the hot season in rural areas. Clinical features were: sudden onset of fever and absence of eschar in all cases, with maculo-papular rash (five cases), prostration (four cases), meningism (three cases) and pneumonia (four cases). Frequent laboratory findings were moderate thrombopenia (four cases) and elevated transaminases (four cases). Before the results of serology, clinical diagnoses were Mediterranean Spotted Fever (four cases), Q fever (one case), pneumonia (one case), and lymphocytic meningitis (one case). Serology confirmed all diagnoses with cross-reactivity with *Rickettsia conorii*.
Conclusion: Murine typhus exists in Tunisia and its prevalence is underestimated. Further, more specific studies are needed to evaluate the true prevalence.

Introduction

Murine typhus, caused by *Rickettsia typhi*, is an endemic zoonosis. Its main vector is the rat flea *Xenopsylla cheopis*, which maintains the micro-organism in rodents. Flea bites and contamination

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of excoriated skin or the respiratory tract with inhalation of infected flea feces are the major sources of human infection.[1] Often unrecognized, murine typhus occurs with high prevalence in the tropics and has been reported in travellers returning from coastal tropical and subtropical regions.[2–4] In Africa, little recent reliable information is available on the prevalence of murine typhus infection. In Tunisia, a north African country where Mediterranean Spotted Fever (MSF) was first described by Conor in 1910, rickettsial diseases were largely described at the beginning of the century.[5] Previous serosurveys indicating the absence of typhus in Tunisia in the 1970s used inappropriate methods.[6] From 1984 to 1992, using a sensitive and specific test for the diagnosis of rickettsial infections, typhus was diagnosed in our hospitals[7] and relatively high seroprevalence was detected among febrile patients and blood donors in the region (central Tunisia).[8,9]

In this study the epidemiological and clinical characteristics of murine typhus are reported with the aim of warning physicians of the persistence or re-emergence of the disease in Tunisia.

Patients and methods

Seven patients with a diagnosis of murine typhus identified between 1993 and 1998 were hospitalized in the infectious diseases unit of the University Hospital in central Tunisia. Clinical and epidemiological data were collected from the patients' charts. Diagnosis was confirmed by a four-fold rise in antibody titer, or by a single high titer $\geq$128 to typhus group antigen by indirect fluorescent assay (IFA). All sera cross-reacted to *Rickettsia conorii* antigen at lower titer.

Five of the seven cases were diagnosed in 1993 when a previous study (determining the prevalence of some infections among febrile patients) permitted retrospective diagnosis of murine typhus. Two other cases were thought to be MSF and complete serology of murine typhus confirmed the diagnosis.

Results

Murine typhus occurred in all ages from 18—80 years during the hot season from May to October in six cases and in January in one case. All patients were from rural or suburban areas; neither flea bites nor exposure to rats were mentioned.

Sudden onset of fever and headache were reported in all cases. A rash, noted in four patients

Table 1 Clinical and biological findings in seven cases of murine typhus.

Case	Age/sex	Rash	Extra-cutaneous findings	Clinical diagnosis	Leucocyte count $\times$ 10^6/L	Platelet count $\times$ 10^6/L	ALAT/ASAT[a]	Sodium mmol/l[a]	Treatment
1	64/M	Maculo-papular Day 6	Interstitial pneumonia	MSF	6.9	345	21/24	128	Doxycycline 10 days
2	80/F	—	Pneumonia, prostration	Pneumonia	8.0	78	95/94	134	Cefotaxime 10 days
3	18/M	—	Meningitis, stupor, prostration	Lymphocytic meningitis	7.0	250	78/76	128	Doxycycline 10 days
4	56/M	Macular Day 4	Confusion, seizures, prostration, meningism	MSF	5.6	95	120/124	126	Ofloxacin 10 days
5	31/M	—	Interstitial pneumonia, meningism, prostration	Q fever	10.0	98	28/24	124	Doxycycline 21 days
6	22/F	Maculo-papular Day 7	Interstitial pneumonia	Q fever/MSF	15.0	95	28/24	140	Doxycycline 21 days
7	62/F	Maculo-papular Day 4	Myalgia, acute renal failure	MSF	12.6	108	69/57	138	Ofloxacin 7 days

[a] Reference ranges for lab values: sodium (136—142 mEq/l); ALAT/ASAT (37/40 U/l). MSF = Mediterranean Spotted Fever.