MEDITERRANEAN SPOTTED FEVER COMPLICATED BY MYOCARDITIS
FIEVRE BOUTONNEUSE MEDITERRANEENNE COMPLIQUEE DE MYOCARDITE

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Abstract

Mediterranean spotted fever (MSF) is caused by *Rickettsia conorii*, obligate intracellular bacteria. Only a few cases of MSF complicated with myocarditis have been published up to date. We describe a case of a 39-year-old Mediterranean (Tunisian) male admitted to our intensive care unit after 3-days history of vomiting, diarrhea and fever (40°C). He presented a diffuse maculopapular rash with a black inoculation eschar on the left hypochondrium. Diagnosis was confirmed by detection of elevated of IgM anti *R. conorii* > 128 and IgG anti *R. conorii* > 1024 using an indirect immunofluorescence assay. Cardiac ultrasound showed dilated ventricle, reduced ejection fraction (42 %) and diffuse hypokinesia. The patient received antibiotic treatment with doxycyclin (vibramycine ®), showing immediate clinical and laboratory improvement. In conclusion, although MSF associated with myocarditis is rare, but in any state of septic shock without evident entry, it is necessary to think about *Rickettsia* infection especially in a Mediterranean area.

Key - words: Myocarditis ; *Rickettsia ; Conorii* ; Mediterranean spotted fever.

Résumé

La fièvre boutonneuse méditerranéenne (FBM) est causée par une bactérie intracellulaire obligatoire *Rickettsia conorii*. Seuls quelques cas de FBM compliquée d'une myocardite ont été publiés. Nous décrivons le cas d'un homme méditerranéen (tunisien) de 39 ans admis dans notre unité de soins intensifs après trois jours de vomissements, diarrhée et fièvre (40°C). Il a présenté une éruption maculopapuleuse diffuse avec une escarre noire d'inoculation sur l'hypochondre gauche. Le diagnostic a été confirmé par la détection d'un taux élevé d'IgM anti *R. conorii* > 128 et d'IgG anti *R. conorii* > 1024 à l'aide d'un test d'immunofluorescence indirecte. L'échographie cardiaque a montré un ventricule dilaté, une réduction de la fraction d'éjection (42 %) et une hypokinésie diffuse. Le patient a reçu un traitement antibiotique à base de doxycycline (vibramycine ®), montrant une amélioration clinique.
En conclusion, bien qu'une myocardite associée à la FBM soit rare, devant un choc septique sans porte d'entrée évidente, il faut évoquer l'infection à *Rickettsie* surtout en zone méditerranéenne.

Mots-clés : Myocardite ; *Rickettsia* ; C*onorii* ; Fièvre boutonneuse méditerranéenne

ملخص

تنجم حمى البحر الأبيض المتوسط المبقعة عن جرثومة ملزمة داخل الخلا ريكتسيا كونو
تم نشر حالات قليلة فقط من الشكل المعقد من التهاب عضلة القلب للمرض وصفنا حالة رجل متوسطي (تونسي) يبلغ من العمر 39 عامًا تم إدخاله إلى وحدة العناية المركزة لدينا بعد ثلاثة أيام من القيء والإسهال والحمى (40 درجة مئوي) قدم مع طفح جلدي بقعي حطاطي منتشر مع زهر أسود على المراق الأيسر. تم تأكيد التشخيص من خلال الكشف عن مستوى مرتفع من مضاد باستخدام اختبار التألق المناعي غير المباشر d'IgM anti *R. conorii* > 128 et d'IgG anti *R. conorii* > 1024
أظهرت الموجات فوق الصوتية للقلب اتساعًا في البطين ، وكسر طرد منخفض (42 ٪) ونقص حركة منتشر. تلقى المريض العلاج بالمضادات الحيوية مع الدوكسيسيكلين ، مما أدى الى تحسن سريري في الختام ، على الرغم من ندرة التهاب عضلة القلب المرتبط بحمى البحر الأبيض المتوسط المتقطعة. ولكن في ظل وجود صدمة إنتانية بدون بوابة دخول واضحة ، يجب على المرء أن يفكر في عدوى الريكتسيا ، خاصة في منطقة البحر الأبيض المتوسط

الكلمات المفاتيح : التهاب عضلة القلب ; ريكتسيا ; كونوري ; حمى البحر الأبيض المتوسط المبقعة.

INTRODUCTION

Mediterranean spotted fever (MSF) is an infectious disease [1]. It is caused by a tick-borne pathogen by *Rickettsia conorii* which is widespread in the Mediterranean area [2]. The infection is transmitted to humans by the brown dog tick or *Rhipicephalus sanguineus* [1]. It is as a seasonal eruptive disease (between April and October, the period of activity of the ticks dependent on climatic conditions [3]. Typical clinical features of MSF include fever, myalgia, headache; generalized maculo-papular rash and an inoculation eschar at the site of the tick bite [3]. The black eschar is found in about 70% of cases [4]. MSF associated with myocarditis are rarely described in the literature [1]. We describe a new case of acute myocarditis complicating MSF in an immunocompetent adult patient with a benign course.

CASE REPORT

In June 2018, a 39-year-old Tunisian male was admitted to our intensive care unit after 3-days history of vomiting, diarrhea and fever (40°C). The patient developed a multi-organ failure; hemodynamic instability, coma (GCS 7/15), seizure with no signs of meningeal irritation and respiratory distress. He presented a bilateral conjunctival infection and a diffuse maculopapular rash involving the palms (figure 1) with a black inoculation eschar at the left hypochondrium (figure2) after a contact with animals (dog). He required mechanical ventilation, catecholamines and vascular filling. In his medical history, there was no evidence of cardiac illness, diabetes mellitus, hepatic or renal dysfunctions. Laboratory analyses showed the following values: Hemoglobin, 12.3 g/dL; Leukocyte count, 11600 cells /mL with predominant neutrophils; severe thrombocytopenia (platelet count, 27000 cells/ mL); Aspartate aminotransferase, 232 IU/L; Alanine aminotransferase, 134 IU/L; severe hyponatremia (sodium, 127 mg/dL), acute renal failure (creatinine ,353 µmol/l) with creatinine clearance at 24.6 ml/mn, C-reactive protein was slightly elevated (238 mg/dL),and procalcitonine,13 ug/L. Arterial blood gas analysis showed a severe acidosis pH:7.21 bicarbonates:15 mmol/L, lactates 4 mmol/ L. We observed an increase in cardiac enzymes peak of NT-proBNP of 13735pg/mL and high-sensitive cardiac troponin T of 1 µg/mL (normal range <0.014 µg/mL). Coagulation parameters were within normal limits.

An electrocardiogram showed bradycardia 40 cycles/minute with normal sinus rhythm. Cardiac ultrasound showed dilated ventricle with telediastolic diameter at 60 mm, reduced ejection fraction (42%), and diffuse hypokinesis (figure 3). The cranial computed tomography (CT) scan was normal, the chest CT scan showed signs of pulmonary congestion. Abdominal ultrasound showed a splenomegaly. Rickettsiosis caused by *Rickettsia conorii* (Meditteranean spotted fever; MSF) was confirmed by detection of elevated of IgM anti *R. conorii* > 128 and IgG anti *R. conorii* > 1024 using an indirect immunofluorescence assay. The patient received antibiotic treatment with doxycyclin (vibramycine®) 200 mg per day for 7 days. The patient showed immediate clinical improvement and he was extubated and weaned from catecholamines without signs of pulmonary congestion. The laboratory control at 3 months showed a decrease of *Rickettsia conorii* level with IgM anti *R. conorii* < 32 and IgG anti *R. conorii* > 1024. No electrocardiography was done at 3 months. For the renal evolution his creatinine level at 3 months was 77µmol/l.

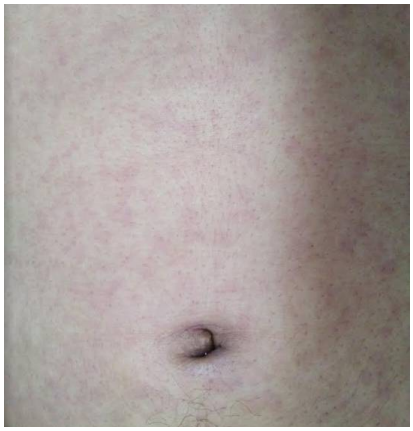

Figure1: A diffuse maculopapular rash

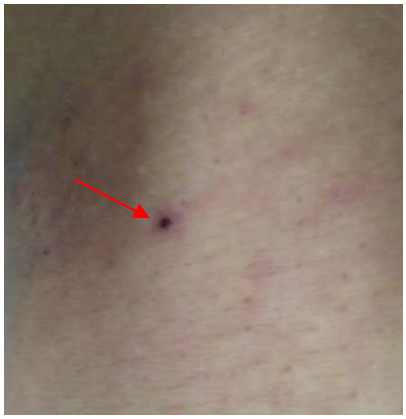

Figure2: A black inoculation eschar at the left hypochondrium

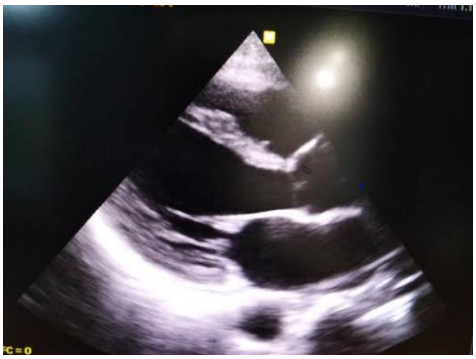

Figure 3 : Transthoracic echocardiography: echocardiogram long axis view showed a dilated ventricle, reduced ejection fraction (42 %) and diffuse hypokinesis.

DISCUSSION

Our case report showed that in any state of septic shock with multi-visceral failure without evident entry, it is necessary to think about *Rickettsia* infection especially in a Mediterranean area [5]. In fact, cardiac impairment is a rare complication of severe *Rickettsia spp* [6]. It could be seen in 10% [6]. Among cardiac complications, arrhythmia has been reported as atrial fibrillation [7], supra-ventricular tachycardia, or conduction disturbances as atrio-ventricular block [6]. Moreover, coronary involvement secondarily to coronary ectasia as the result of the rickettsial vasculitis [4] and acute pericarditis was descripted [8]. Myocarditis is a rare complication [1,3,9]. Few cases were reported in the literature especially in Italia [10]. One case of Japanese spotted fever complicated with acute myocarditis has also been described [11]. In Tunisia, as we know, it was the first case of MSF complicated with myocarditis. The pathogenesis of MSF results from disseminated intraendothelial cell infection and vascular damage [2]. Complications are associated with multifocal vascular injury [2]. The definitive diagnosis of myocarditis can be made only by endomyocardial biopsy, an invasive procedure that carries the risk of lethal complications [11]. So the diagnosis could be made by epidemiological, clinical signs, laboratory tests and echocardiogram as our patient [1]. The mortality rate of MSF is estimated around 2.5% and risk factors for severe forms include elderly patients, diabetes, cardiovascular illness, chronic renal failure, glucose 6-phosphate dehydrogenase deficiency and chronic alcoholism [7]. But complicated forms can happen in patients without risk factors [7] as our patient who was previously healthy and he didn't have a history of risk factors. The coma observed in our patient was secondary to low brain flow secondary to shock.

CONCLUSION

MSF is a benign disease but some complications can happen. Despite treatment a fatal outcome could occur, especially in adults with myocarditis. So physician should be aware of the exceptional possibility of acute myocarditis during the course of rickettsial spotted fever.

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