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Case Report

Paroxysmal atrial fibrillation: an unusual association of leptospirosis

Sathwik Raj, Prakash Rao, Rame Gowda, C. Ramachandra Bhat*

Department of General Medicine, KVG Medical College, Sullia, Karnataka, India

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***Correspondence:**
Dr. C. Ramachandra Bhat,
E-mail: crbhat1@rediffmail.com

ABSTRACT

A 60 year old nonsmoker, non-diabetic, normotensive farmer presented with 4 days history of fever, myalgia & headache. He had relative bradycardia, eye congestion, diffuse muscle tenderness and tender hepatomegaly at presentation. He developed subconjunctival hemorrhage on 3rd in-hospital day. His investigations showed thrombocytopenia, hepatic and renal dysfunctions. His leptospira serology was positive. He was treated with injection crystalline penicillin and supportive therapy. While on treatment, even though he did not have any known cardiac risk factors, except for his age & gender, he developed 3 paroxysms of atrial fibrillation on 5th - 7th in-hospital days, without hemodynamic instability. His cardiac markers and echocardiogram during the paroxysms were otherwise normal. He had uneventful recovery, remained in sinus rhythm and stable at follow-up. This paroxysmal atrial fibrillation may be a coincidence or attributed as unusual association of leptospirosis.

Keywords: Leptospirosis, Atrial fibrillation, Thrombocytopenia, Subconjunctival hemorrhage

INTRODUCTION

Leptospirosis is an important zoonotic disease with varied clinical manifestations in a biphasic manner and is endemic in many parts of India. Common manifestations are hepato-renal involvement & thrombocytopenia. In untreated cases, multisystemic complications are common. Cardiac arrhythmia is rather rare in leptospirosis.

This case is presented due to rare occurrence of paroxysmal atrial fibrillation in a middle aged male with leptospirosis, with no other risk factors for cardiac illness.

CASE REPORT

A 60 year old non-smoker, non-alcoholic male farmer presented with h/o episodic high grade fever with chills & rigors of 4 days, associated with headache, myalgia & diffuse abdominal pain. He had cough with scanty, mucoid expectoration, but there was no hemoptysis, dyspnoea or wheeze. He had high colored urine with reduced urine output 2 days prior to admission. He was previously healthy & there was no history of hypertension, diabetes or cardiac disease in the past.

At admission, middle aged, moderately built male was appearing sick. His temperature - 101°F, pulse rate was 58/min, regular with good volume suggestive of relative bradycardia. He had severe calf, thigh & rectus muscle tenderness, bilateral conjunctival congestion, tender liver with liver span of 16 cms, but no splenomegaly or free fluid in abdomen. He had normal vesicular sounds with equal air entry & fine inspiratory crepitations on both lung fields. His heart sounds were normal and there was no murmur. His nervous system was unremarkable.

On 3rd day he developed subconjunctival hemorrhage (Figure 1). Serial monitoring revealed improvements in his clinical and laboratory parameters including platelet count, hepatic and renal functions.

Figure 1: Subconjunctival hemorrhage on day 3.

On 5th in-hospital day, he complained of sudden palpitation without chest pain. He had irregularly irregular pulse and atrial fibrillation was documented on ECG (Figure 2). As he was hemodynamically stable, no active treatment was given for AF, which resolved spontaneously, but recurred twice lasting 12-14 hours in next 2 days.

Figure 2: Rhythm strip on day 5 showing AF with fast ventricular rate.

Investigations

His initial investigations are as follows: Hb – 11 gm%; TWBC - 14700/mm^3, P - 91 %, L - 9%, ESR - 70 mm at 1 hour. Platelet count - 12,000/mm^3, blood urea - 85 mg/dl, Sr. Creatinine - 1.8 mg/dl, total bilirubin - 3.1 mg/dl, direct bilirubin - 1.6 mg/dl, SGOT - 34 IU/L, SGPT - 39 IU/L, CPK - 42U/L, Na – 136 meq/L & K^+ 3.8 meq/L. His abdominal sonography revealed - hepatomegaly & bilateral grade I renal parenchyma changes. Leptospira antigen & antibody tests were positive. Peripheral smear was negative for malaria parasite and dengue serology was negative. During the paroxysm of AF, troponin I was negative. His LA size was 31 mm by echocardiography & it did not reveal any RWMA, LVH or valvular lesions.

Differential diagnosis

Short duration of fever, myalgia, icterus, thrombocytopenia, subconjunctival hemorrhage and azotemia in middle aged farmer, is very typical of leptospirosis. Positive leptospira serological test, high CRP, high CPK, hyperbilirubinemia with normal liver enzymes and azotemia helped us to confirm leptospirosis, and initiate early appropriate therapy.

Similar clinical picture may appear in malaria & dengue fever, but sub conjunctival hemorrhage is very unlikely and CRP - CPK are normal or mildly elevated. Also in malaria, splenomegaly is a common feature.

In this patient, peripheral smear was negative for malaria parasite & dengue serology was negative.

Paroxysmal atrial fibrillation in middle aged male is commonly due to ischemic heart disease, hypertension or RHD. Apart from structural heart disease, AF can occur on various situations of fever, alcohol intake, and disorders of electrolytes or hemodynamic changes.

In this case of confirmed leptospirosis, in spite of patient being non-smoker, non-diabetic, normotensive, normal left atrial size & no evidence of LVH, RWMA or valvular lesion by echocardiography, the paroxysms of atrial fibrillation may be a coincidence or may be considered as an unusual association of leptospirosis.

Treatment

He was treated with IV crystalline penicillin, paracetamol, IV fluids and other supportive medications. Stringent monitoring of BP, urine output and for bleeding or any complications was done.

Outcome and follow-up

He had good clinical recovery & there was no further episodes of AF and was discharged latter. Even on 4 & 12 week follow-up he remained in normal sinus rhythm.

DISCUSSION

Leptospirosis is a globally important zoonotic disease, caused by spirochete of leptospira species with several serotypes like *L. icterohaemorrhagiae*, *L. canicola*, *L. pomona*, *L. grippotyphosa*, *L. bratislava*. The infection is commonly transmitted to humans either through direct contact with urine of infected animals or through contact with water, soil, or food contaminated with the urine of infected animals. The bacteria can enter the body either through intact and abraded skin or through mucous membranes of eyes, nose, or mouth. It is a major health problem in developing countries.[1]

Leptospirosis is a biphasic illness, begins with fever, chills, myalgia and intense headache. The first phase resolves and the patient is briefly asymptomatic until the second phase begins. This is characterized by hepatic and renal involvement and sometimes as meningitis. The severe form of the disease with hepato-renal damage is known as Weil's disease. Common complications are thrombocytopenia, DIC, acute tubular necrosis and ARDS. Cardiac complications such as chest pain, arrhythmias, pulmonary oedema and refractory shock have been reported in patients with severe disease.[2]

The presence of transient ECG abnormalities such as sinus tachycardia, non-specific ventricular repolarisation disturbances, bundle branch or ventricular conduction disturbances and atrial fibrillation are noted rarely at the beginning of disease and possibly are caused by the direct effect of leptospira or febrile disease with a combination of metabolic and electrolyte abnormalities.[3] Cardiac involvement, demonstrated electrocardiographically or

clinically, tends to predict poor outcome. No specific therapies are available to prevent or treat cardiac involvement in leptospirosis; current management of complications is based on correction of deranged homeostasis and supportive therapy.[2]

Poor prognostic factors in leptospirosis are advanced age, clinically evident pulmonary involvement, oliguria, impaired renal functions & thrombocytopenia.[1]

Take home messages

- Fever, myalgia, thrombocytopenia, subconjunctival hemorrhage and azotemia in a farmer are typical of leptospirosis.
- Keep a vigil on possible multisystemic complications in leptospirosis.
- Atrial fibrillation in a patient with leptospirosis may be a coincidence or could be an unusual complication of leptospirosis.

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