Rickettsial Fever Presenting with Isolated Third Nerve Palsy

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Abstract

Rickettsial fevers are known to have neurological involvement, mostly in the form of meningoencephalitis. Focal neurodeficits, including isolated cranial nerve palsies have been rarely reported. We hereby report a case of a 25 year old man who presented to us with high grade fever caused by rickettsia and left sided partial third cranial nerve palsy. He responded to doxycycline.

Introduction

Rickettsial diseases are caused by the rickettsiae, a heterogeneous group of small, obligate intracellular, gram-negative cocccobacilli and short bacilli. They are transmitted by tick, mite, flea, or louse vectors. Rickettsial infections have historical importance in having been great scourges in past centuries and are held to be important re-emerging infections in the present day. Rickettsial fevers may present with neurological involvement, most commonly in the form of encephalitis (26-28%) or aseptic meningitis as evident on cerebrospinal fluid examination. Permanent neurologic sequelae such as such disturbances, learning disorders, motor deficits and cranial nerve palsies have been seen but are extremely uncommon. The real incidence of Rickettsial fevers in India is not known due to gross underreporting, partly due to lack of easy availability of diagnostic tests.

Case Report

A 25 year old man with no co-morbidities presented to us with high grade fever since 5-6 days. He also complained of sudden onset drooping of left eyelid and diplopia since 4 days. He had noticed a rash developing on his lower limbs after the fever had commenced. He had no headache, vomiting, convulsions, loss of consciousness, weakness or history suggestive of any other cranial nerve involvement. On examination he was febrile with a temperature of 104 F and hemodynamically stable. There was no evidence of lymphadenopathy, pallor or icterus. A careful search did not reveal any eschar on the body. Lower limb examination revealed an erythematous macular rash present on bilateral shins, with petechiae on ankles, spreading to the soles. Examination of left eye revealed ptosis, associated with medial onset drooping of left eyelid and diplopia since 4 days. He had noticed a rash developing on his lower limbs after the fever had commenced. He had no headache, vomiting, convulsions, loss of consciousness, weakness or history suggestive of any other cranial nerve involvement. On examination he was febrile with a temperature of 104 F and hemodynamically stable. There was no evidence of lymphadenopathy, pallor or icterus. A careful search did not reveal any eschar on the body. Lower limb examination revealed an erythematous macular rash present on bilateral shins, with petechiae on ankles, spreading to the soles. Examination of left eye revealed ptosis, associated with medial

Discussion

Rickettsial diseases have a worldwide prevalence, and are endemic in many states of India including the interiors of Maharashtra, from where the patient hailed. Rickettsial fevers found in India are Scrub typhus (O. tsutsugamushi) and Indian tick typhus (R. conorii) which is a rickettsial spotted fever. Early signs and symptoms of these infections are nonspecific and mimic benign viral illnesses, usually presenting with fever at the outset. Diagnosis primarily requires a high index of suspicion. Other clinical features of the spotted fevers include skin rashes, jaundice, nervous system involvement, respiratory involvement and prerenal renal failure. The rash is usually macular, maculopapular, petechial or palpable rash resembling vasculitis, and typically involves the palms and soles. A classic triad of fever, rash, and history of tick exposure is often cited. However Indian patients rarely report tick exposure (around 50%), and eschar is uncommon. The pathogenesis of organ involvement in rickettsial fever is attributed to vasculitis. Vasculitis is responsible for skin rash, microvascular leakage, edema, tissue hypoperfusion and end-organ ischemic injury. Formation of thrombi can lead to tissue infarction and hemorrhagic necrosis. Neurological involvement (meningoencephalitis) is attributed to inflammation and vascular leakage of intracranial blood vessels. Focal deficits may be associated with such meningoencephalitis but may rarely occur in the absence of

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Received: 06.07.2011; Revised: 06.07.2011; Accepted: 12.08.2011

normal lung fields. His peripheral blood smear was negative for malarial parasite. Serological tests for malaria (antigen assays), leptospira, salmonella and dengue were negative. Blood culture failed to show any growth. Cerebrospinal fluid examination revealed normal protein (16 mg%) and sugar (62 mg%), with 3 lymphocytes and no polymorphonuclear cells on cytology. Patient was empirically started on antimalarials at presentation. Magnetic resonance imaging of brain and orbits with angiography revealed no abnormalities. Meanwhile a Weil- Felix test was done, which showed significantly raised titres to proteus antigen (ag) OX 19 (1:320) and proteus Ag OX 2 (1:640), suggestive of infection with rickettsia of spotted fever group. On day three of fever, antimalarials were withheld and doxycycline was added. The patient responded with rapid defervescence within 36 hours along with disappearance of the rash. A diagnosis of rickettsial fever with left third cranial nerve palsy was held. His cranial nerve palsy remained static till discharge but has shown improvement when followed up four weeks later.
typical clinical and cerebrospinal fluid picture of the same. Cranial nerve involvement in rickettsial fevers have been noticed, where 2 incidences of facial palsy and one of vestibulocochlear nerve palsy have been documented. As of our knowledge, no case of isolated third nerve palsy in rickettsial fever is published. In the absence of laboratory and imaging features of meningeal inflammation, the isolated palsies are attributed to vasculitis selectively affecting the said nerves. The diagnosis of rickettsial fevers is made using serology. The Weil Felix test is an agglutination test for the diagnosis of rickettsial infections based on antigenic cross-reactivity between Rickettsia species (spp.) and certain serotypes of non-motile Proteus spp. Somatic (O) antigen cross-reacts with anti-rickettsial antibodies, and different Proteus O antigens cross-react with different species of rickettsia. Diagnosis is confirmed using immunofluorescence assays, considered the gold standard, but costs in India remain prohibitive at present. The Weil Felix test can be a useful tool when used and interpreted in the correct clinical context. In the milieu of typical clinical features, supportive laboratory features, history of tick exposure and prompt response to treatment, the test shows acceptable specificity and sensitivity. Various antibiotics useful in the treatment if rickettsial fevers include tetracyclines (mainly doxycycline), chloramphenicol, macrolides and fluoroquinolones. Doxycycline remains the drug of choice. Steroids (oral prednisolone) were tried in two of the published cases of facial palsy but their utility remains unknown.

Conclusion

Rickettsial fevers are endemic in India and require a high index of suspicion; however once diagnosed, they are easy to treat and should be considered a valid differential of fever with rash. This case demonstrates that rickettsioses should be included in differential diagnosis of fever presenting with isolated cranial nerve palsies in endemic areas.

References

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