



Parkinsonism and Amnesia as Rare Neurological Manifestations of Scrub Typhus

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Abstract

Many Rickettsia species are causing human diseases in areas of the world where rickettsioses were previously not investigated in depth. Scrub typhus is a zoonotic disease caused by Orientia tsutsugamushi characterized by focal or disseminated vasculitis and perivasculitis which may involve the lungs, heart, liver, spleen and central nervous system. A 70 year old female presented with complaints of fever, myalgia, cough and breathlessness of 1 week duration. She had tachycardia, bilateral crepitations with hypoxia. ABG and Chest X ray showed ARDS with sinus tachycardia and elevated troponin I suggestive of myocarditis. Patient was started on piperacillin tazobactam, doxycycline, steroids and other measures. Patient was improving symptomatically but during inpatient stay developed masked facies, rigidity in all limbs with cogwheel rigidity. She was symptomatically managed with tab benzhexol and was discharged. During the regular follow up after a week, patient was noted to have been relieved of the parkinsonism features. She was noted to have amnesia of the period from admission, and the hospital stay. She was positive for Ig M Scrub Elisa. The neurological manifestations of scrub typhus are not uncommon but are diverse. These include meningoencephalitis with focal neurological deficits, cranial nerve palsies, neuroleptic malignant syndrome and Guillain-Barré syndrome. We are presenting this case as our patient has two very uncommon neurological manifestations of scrub typhus namely transient parkinsonism and amnesia in addition to ARDS and myocarditis.

Keywords: scrub typhus, transient parkinsonism, amnesia, ARDS, myocarditis.

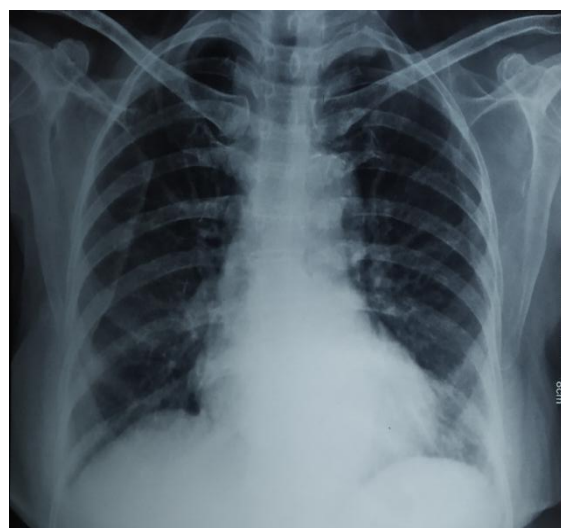
Case Report

A 70 year old female kidney donor with complaints of high-grade fever with chills since 1 week associated with myalgia was admitted. She also complained of breathlessness since 2 days and oliguria since 1 day. There was no c/o pain

abdomen, vomiting, dysuria, no neurological symptoms, no epidemiological setting of leptospirosis, and no travel outside. Other than kidney donation her medical history was unremarkable. There was no history of movement disorders or any memory deficits in the past.

Examination revealed tachycardia with bilateral coarse crepitations and hypoxia. No eschar was evident. Other systems examination was within normal limits including higher functions.

Hb	10.8	9.6	9.7
TC	14400	6700	4600
DC	L21 M3 N78		
PLC	87000	86000	2.15 lakhs
MCV	88.6		
Hct	32.8		
ESR	35		
RBS	143		
RFT	66/1.8	74/1.3	21/1.0
SE	135/3.5	130/4.0	137/4.1
TB/DB	1.1/0.6		0.8/0.1
TP/Alb	4.9/3.0		5.4/2.9
ALP	141		113
OT/PT	423/189		74/43
PT INR	1.15		
APTT	33.1		
URE	PC- 1-2 RBC-10-12		



Repeat Chest X-ray at day 10

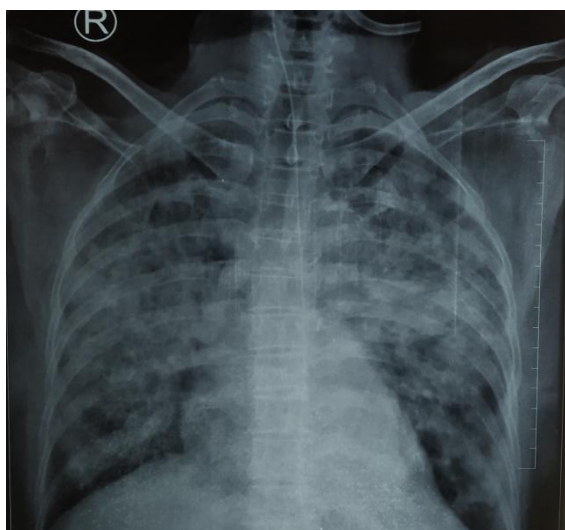
By 4th day the patient developed masked facies, rigidity in bilateral upper and lower limbs, resting tremors and cogwheel rigidity. Her power in both upper and lower limbs was 5/5 with normal deep tendon reflexes and plantar reflexes. There was no signs of meningeal irritation and no cerebellar signs.

Photograph during and after parkinsonism:

Other Investigations

Calcium	7.8	ABG	
Phosphorus	4.3	pH	7.38
Uric acid	7.5	pCO2	29.7
TSH	0.13	pO2	52
HIV	Negative	sO2	88
HBsAg	Negative	HCO3	17.3
HCV	Negative	ECG	sinus tachycardia
		Troponin I	0.18

USG KUB: Bulky right kidney with raised echoes possible AKI, Right HUN possibly distal obstruction, Right pleural effusion.



Initial Chest X-ray



CT brain: Deep white matter ischemia, age related atrophic changes

CSF study: TC 4 cells, Lymphocytes 100%, Protein-15 mg/dL, Sugar- 69 mg/dL, ADA- 5.2(<10)

MRI Brain showed Age related atrophic changes. Patient was started on tab benzhexol. Her rigidity improved in the next one week and on follow up all her extrapyramidal features were noted to have disappeared. On the next follow up it was reported by the family members that patient lost memory about the whole event which surprised the family members. Higher mental functions were reassessed which was still within normal limits except memory. She was noted to have lost memory about the period of her illness including the admission in the hospital and the whole period of hospital stay. Her remote and recent memory was intact. She couldn't recollect anything during her illness period. All the parkinsonism features disappeared. To summarize, this patient diagnosed to have scrub typhus was found to develop ARDS, myocarditis, transient parkinsonism and amnesia which is an uncommon presentation in a single patient.

Discussion

Several *Rickettsia* species are causing diseases in many areas of the world where it was previously not investigated in depth⁽¹⁾. Scrub typhus is caused by *Orientia tsutsugamushi*. Pathologically it causes focal or disseminated vasculitis and perivasculitis in various organs including lungs, heart, liver, spleen and nervous system. The clinical features and severity of the symptoms vary. Nervous system manifestations are not uncommon but are protean⁽²⁾. Meningoencephalitis⁽³⁾, cerebellitis, cranial nerve palsies, plexopathy, transverse myelitis, neuroleptic malignant syndrome and Guillain-Barré syndrome are reported⁽⁴⁾. Parkinsonism following an acute encephalitis have been described after West Nile infection, Influenza encephalitis and other neurotropic virus encephalitis⁽⁵⁾.

Literature review that there are only 2 case reports of parkinsonian features in Scrub typhus. Chiou *et al* presented a 55-year-old man who experienced acute onset bilateral limb tremor, rigidity, and myoclonus with small-stepped gait, and skin rash

involving the trunk and limbs, after a fever. Serum was positive for anti-*O. tsutsugamushi* IgM antibody. MRI brain was normal. The fever improved with oral doxycycline, and the Parkinsonism and myoclonus improved with amantadine and clonazepam⁽⁶⁾. Premaratna *et al* reported a 62-year-old presented with high fever with malaise, myalgia, and arthralgia for 17 days. On the 5th day, he developed intermittent resting tremor in his right arm and leg associated with stiffness, difficulty in carrying out normal work, and difficulty in smiling. There was no similar history in the past. He had no other neurological manifestations. Examination revealed resting tremor in his right hand, a mask-like face and rigidity of muscles tone on the right side with normal reflexes. He had an eschar over the abdomen and serology for *O. tsutsugamushi* was positive. With oral doxycycline and azithromycin, his fever settled within 48 h and completely recovered⁽⁷⁾. Many movement disorders such as Parkinsonism, occur as consequence of central nervous system infection, either as an acute or chronic manifestation. The same has been documented with scrub typhus⁽⁸⁾.

There is only one case series in the literature about occurrence of amnesia in Scrub typhus⁽⁹⁾.

Conclusion

Scrub typhus is usually a benign febrile illness accompanied by headache, myalgia, and cutaneous eruptions. However, complications and fatalities are occasionally seen⁽¹⁰⁾. Clinicians practicing in endemic regions should be familiar with the varied manifestations of scrub typhus including common and uncommon manifestations and careful examination for eschar must be made⁽¹¹⁾. Likewise, a trial of doxycycline on empirical basis may prove beneficial for patients with "undiagnosed febrile syndromes" because response to treatment is dramatic in Rickettsial infections and lifesaving. Such an approach can be beneficial in settings where the diagnostic facilities of Rickettsial diseases are not available. The early identification of the varied presentation

of this emerging zoonoses and high index of suspicion of this treatment responsive illness is vital especially in this era of increasing national and international travel.

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