Typhoid Masquerading as Japanese Encephalitis

Maj A Henderson
BMedSci, BM BS, MRCP, RAMC

Lt Col R J Knight
MB BS, FFA RCSI, RAMC

2/Lt J R Livesey
BA, RAMC

British Military Hospital, Dharan

SUMMARY: We describe a variant of typhoid which was clinically indistinguishable from Japanese Encephalitis (JE). The strongly encephalitic presentation led to a potentially serious delay in starting specific antibiotic therapy. Awareness of the usual form of typhoid is of great importance to Army doctors because of the presence of British soldiers and families in the Dharan area of southern Nepal where both typhoid and JE are endemic.

Introduction

It has become apparent that Japanese Encephalitis is a serious health hazard in the Terai region of southern Nepal — including the area around the British Military Cantonment of Dharan. Small numbers of cases occur throughout the year with major epidemics during the summer months. The clinical picture is usually striking with a brief prodrome comprising fever, headache and vomiting followed by a severe acute brain syndrome with depression of consciousness, fits, meningism, focal signs and spasticity.

Although typhoid, which is common throughout Nepal, may produce a wide variety of neurological abnormalities, it is usually sufficiently distinctive in its presentation to be easily differentiated from JE.

We describe an encephalitic variant of typhoid which occurred at the onset of the JE season which was clinically indistinguishable from JE. The importance of this presentation to doctors treating patients living in or who have visited Nepal is stressed.

Case History

A 23-year-old Nepalese man was admitted as an emergency to BMH Dharan in south-east Nepal. His father gave a history of a febrile illness of 7 days duration associated with severe headache, vomiting, generalised myalgia and a dry cough. Two days before admission he had become drowsy, unable to stand and incontinent of urine.

On examination he was febrile (39°C) and had a tachycardia. The abnormal signs were otherwise confined to the nervous system. He was very drowsy with marked meningism and a right hemiparesis. There was generalised spasticity with sustained clonus at both ankles and bilateral upgoing toes. The pupils were unequal and reacted only sluggishly to light. Fundoscopy was normal.

Investigation revealed a haemoglobin of 10.2 gm/dl, WBC of 3.1 x 10^9/l and a blood sugar of 5.7 mmol/l. Urea, electrolytes, liver function tests, chest X-ray and cerebrospinal fluid (CSF) were all normal. Thick and thin blood films revealed no evidence of malaria and blood cultures were negative at 48 hours.

As the patient was admitted at the start of the encephalitis season and had a typical prodrome followed by an acute brain syndrome, a diagnosis of JE was made. He remained unchanged on supportive treatment. On the fifth day a pure growth of *Salmonella typhi* was isolated from the admission blood cultures. Chloramphenicol 500 mg four times daily by mouth was commenced. After 48 hours he was much improved. The antibiotic was discontinued after 10 days. Over the ensuing 3 weeks all the abnormal signs disappeared. He was eventually discharged fully recovered with negative blood, stool and urine cultures. Japanese Encephalitis Virus antibody titres, which were not received until after discharge, were negative.
Discussion

In many parts of Asia including the Terai region of southern Nepal both typhoid and JE are common. People living in or visiting such areas are potentially exposed to both diseases. JE produces a characteristic clinical picture which usually allows a confident diagnosis to be made particularly during the summer months when the disease assumes an epidemic form. Specific serology, although diagnostically helpful in retrospect, is of no value in the early crucial days. As the treatment of JE is entirely supportive it is essential to exclude diseases such as cerebral malaria and bacterial (including tuberculous) meningitis which may produce a similar illness but for which specific therapy is available.

Although typhoid may produce a bewildering array of neurological abnormalities it rarely causes serious difficulties in the differential diagnosis of JE. The case described above however shows that occasionally typhoid may present with a constellation of signs and symptoms identical to JE. Such cases occurring in areas of high JE virus activity during the epidemic season can cause grave diagnostic difficulties. Mis-diagnosis may lead to a potentially dangerous delay in starting specific antimicrobial therapy.

In retrospect there were two clues as to the correct diagnosis. Firstly the presence of leucopenia in a drowsy febrile patient should have suggested typhoid rather than JE where a neutrophilia is typical. Secondly the presence of respiratory symptoms during the early phase of the illness was in favour of typhoid. The normal CSF picture was less helpful. In typhoid even when meningism is pronounced (except in the rare cases of true typhoid meningitis) the CSF is normal. Although in JE the CSF typically demonstrates an elevation of the protein and lymphocyte count it is normal in a significant minority.

It is important that doctors remain vigilant and include typhoid in the differential diagnosis of acute viral encephalitis. In Nepal where JE is endemic the presence of atypical features such as respiratory symptoms or the absence of blood neutrophilia should be viewed with suspicion. If on lumbar puncture, in a patient with encephalitis, the CSF contains an excess of protein or lymphocytes and the Gram stain is negative, typhoid would be virtually excluded. In seriously ill patients with suspected JE who might die before blood cultures become positive, which may take up to 10 days, particularly if atypical features are present, the early exhibition of amoxycillin or chloramphenicol should be considered. In developed countries and of particular importance to international travellers, the diagnostic dilemma can be solved by an enzyme-linked immunosorbent assay of CSF which is capable of detecting the presence of JE virus specific IgM even at an early stage of JE.

REFERENCES

Typhoid Masquerading as Japanese Encephalitis

A Henderson, R J Knight and J R Livesey

*J R Army Med Corps* 1984 130: 183-184
doi: 10.1136/jramc-130-03-07

Updated information and services can be found at:
[http://jramc.bmj.com/content/130/3/183.citation](http://jramc.bmj.com/content/130/3/183.citation)

These include:

**Email alerting service**
Receive free email alerts when new articles cite this article. Sign up in the box at the top right corner of the online article.

Notes

To request permissions go to:
[http://group.bmj.com/group/rights-licensing/permissions](http://group.bmj.com/group/rights-licensing/permissions)

To order reprints go to:
[http://journals.bmj.com/cgi/reprintform](http://journals.bmj.com/cgi/reprintform)

To subscribe to BMJ go to:
[http://group.bmj.com/subscribe/](http://group.bmj.com/subscribe/)