

LESSON OF THE MONTH

Tetanus: delay in diagnosis in England and Wales

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Abstract

A 7 day delay occurred in the diagnosis of cephalic tetanus in a 69 year old woman who developed an ipsilateral facial palsy 5 days after a facial laceration. Cranial nerve palsies often precede trismus in this form of tetanus.

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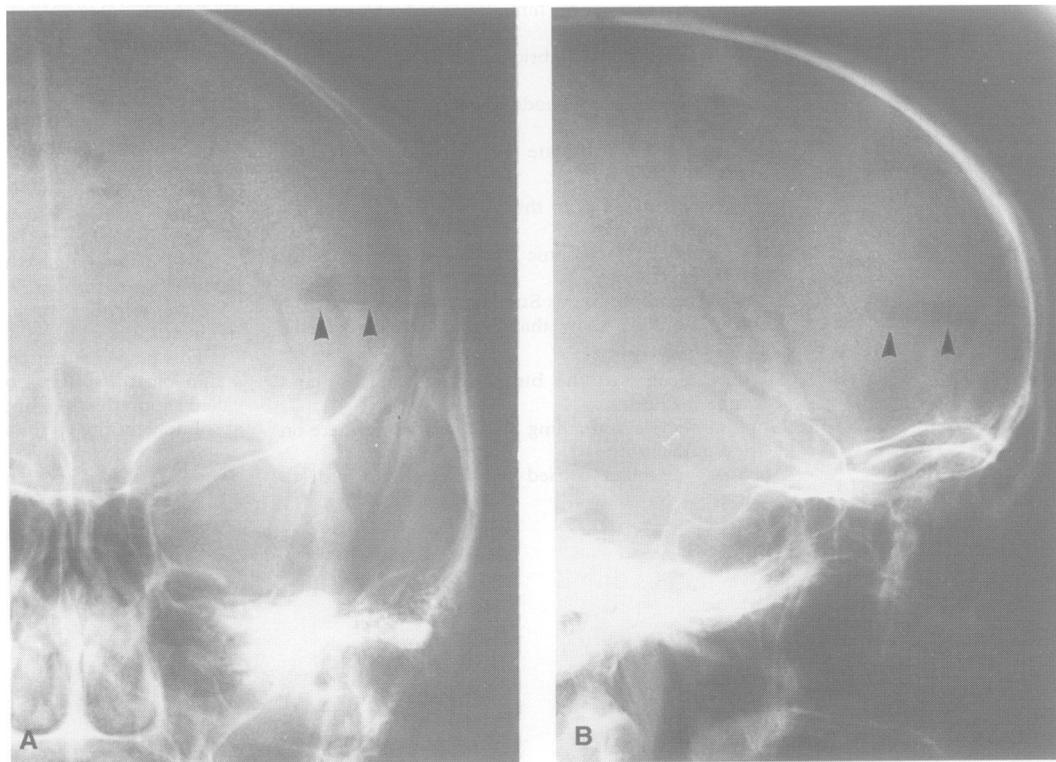
There are only about 15 cases of tetanus reported in the United Kingdom each year. This means that unless doctors have worked in the third world they are exceedingly unlikely to have first hand experience of diagnosing tetanus, which can lead to potentially serious delays in making the diagnosis. This is particularly likely to occur with some of the rarer clinical presentations such as cephalic tetanus,¹ which accounts for about 3% of all cases and occurs when the infected wound is on the head or face. It often results in cranial

nerve palsies on the side of the wound before the development of trismus. The current report shows the diagnostic difficulties which delayed diagnosis by one week in a recent case.

Case report

A sixty nine year old Caucasian housewife, with no previous tetanus immunisation, fell against her garage wall cutting the left side of her scalp in the temporal region and ending up lying on an adjacent flower bed with the wound exposed to the soil. She attended the accident and emergency department of her local hospital on the same day where a 2 inch laceration was cleaned and sutured, a single injection of tetanus toxoid was given and a routine skull radiograph was taken. No antitetanus immunoglobulin was given at that stage.

Five days after the injury the patient developed a droop of the left side of her face. On



Lateral (A) and anteroposterior (B) views of skull radiograph showing free gas in the left temporal region.

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the next day she developed pain and tenderness over the left jaw and had difficulty opening her mouth. On the eighth day she reattended the original accident and emergency department where a complete left lower motor neuron facial palsy was diagnosed. The initial skull radiograph was reviewed and an abnormal gas shadow was noted in the left temporal region (fig).

The provisional diagnosis of a fractured mandible was made and although a repeat radiograph failed to confirm any fracture, the patient was referred to the faciomaxillary clinic where she was seen on the ninth day after the initial injury. A jaw fracture was excluded and the presumed diagnosis was of a petrous temporal bone fracture associated with spontaneous intracranial air and a facial palsy. The patient was referred to the neurology clinic.

During the seven days when the patient had severe trismus before diagnosis, she was unable to eat but her husband fed her liquids by pushing a drinking straw between her back teeth. In the course of this week she visited her general practitioner on three occasions and each time was told to take non-steroidal anti-inflammatory tablets despite her protestations that she was unable to open her mouth enough to admit the tablets.

On the 12th day after injury the diagnosis of cephalic tetanus was made in the neurology outpatient department. She was immediately admitted to hospital and within three hours started to have episodes of laryngeal spasms that necessitated emergency intubation. She was treated with intravenous benzyl penicillin and rectal metronidazole. Intravenous gammaglobulin was initially given followed by human hyperimmune antitetanus immunoglobulin. Brain CT failed to show any intracranial gas and it was assumed that the air seen on the original skull radiograph was subcutaneous air within the wound. The wound itself was debrided; pieces of gravel were found and removed. The patient required tracheostomy, ventilation, and intravenous diazepam for five weeks after which she made a full recovery and completed her full active tetanus inoculation course.

Discussion

In 1963 Raymond Adams wrote that "Tetanus may be one of the easiest or one of the most difficult diagnoses in medicine."²

It is clearly important that anyone who develops delayed cranial nerve palsies on the same side as a scalp wound should have the diagnosis of cephalic tetanus considered. The development of ipsilateral lower motor neuron facial weakness before any subsequent trismus has been described in Britain only three times³⁻⁵ before but Abde and DeKate¹

report that it occurs in 42% of cephalic tetanus cases.

Cases of tetanus are categorised as local, cephalic, or generalised. Cephalic tetanus is characterised by trismus plus one or more motor cranial nerve palsies. About 60%^{1,6} of cases subsequently become generalised. Because of this tendency, early diagnosis and initiation of treatment are vital.

The pathophysiology of the paralysis in cephalic tetanus is not completely understood. It is postulated that large amounts of toxin accumulate locally at the neuromuscular junction, which results in the presynaptic blockade of acetylcholine release.^{7,8}

Although tetanus is a rare disease in the developed world, it predominantly (as in the current case) affects the elderly who have either never received primary immunisation or who have not received recommended tetanus booster immunisations.^{9,10} One hundred and sixteen cases of tetanus were reported to the Public Health Laboratory Service Communicable Disease Surveillance Centre for England and Wales between 1984 and 1991 of which 55% were inpatients aged over 64 years.¹¹ Women accounted for two thirds of the cases in the over 64 year old age group. This may be because many older men received tetanus immunisation during military service. Particular attention to the likely lack of immunisation of elderly patients presenting with tetanus prone wounds may improve tetanus prevention.

The delay between onset of symptoms and the subsequent diagnosis and admission to hospital was studied in these 116 cases. Information was available for 77 cases of which 35% (27 cases) were admitted to hospital on the day the first symptoms of tetanus started, 45% (35 cases) were admitted one to four days after onset, and in 6% (five cases) there was a delay of five to seven days. As the current case illustrates diagnostic delays can expose patients to serious avoidable risks.

- 1 Abde V, DeKate M. Cephalic tetanus. *Indian Med Assoc* 1980;74:111-20.
- 2 Struppler A, Struppler E, Adams RD. Local tetanus in man. *Arch Neurol* 1963;8:162-78.
- 3 Bagratuni L. Cephalic tetanus with report of a case. *BMJ* 1952;1:461-3.
- 4 Park DM. Cranial nerve palsies in tetanus: cephalic tetanus. *J Neurol Neurosurg Psychiatry* 1970;33:212-5.
- 5 Mayo J, Besciano J. Cephalic tetanus presenting with Bell's Palsy. *J Neurol Neurosurg Psychiatry* 1985;48:290.
- 6 Rutledge L, Kremenz E. Cephalic tetanus. *Arch Otolaryngol* 1960;72:170-1.
- 7 Fernandez J, Ferrandiz M, Larrea L, Ramio R, Boada M. Cephalic tetanus studied with single fibre EMG. *J Neurol Neurosurg Psychiatry* 1983;46:862-6.
- 8 Garcia-Mullin R, Daroff R. Electrophysiological investigations of cephalic tetanus. *J Neurol Neurosurg Psychiatry* 1973;36:296-30.
- 9 Weiss B, Stranburg M, Feeley J. Tetanus and diphtheria immunization in an elderly population in Los Angeles County. *Am J Public Health* 1983;73:802-4.
- 10 Scher K, Baldera A, Wheeler W. Inadequate tetanus protection among the rural elderly. *South Med J* 1985;78:154-9.
- 11 *Communicable Disease Report* 1993;3:73.