

Clinical Records

Tetanus: the ‘forgotten disease’. A rare cause of dysphagia and trismus

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Abstract

Tetanus kills approximately 500 000 people worldwide each year. Widespread immunization has ensured that it is rarely encountered in the United Kingdom. An increase in global travel may increase the likelihood of such encounters in the developed world in the future.

In the non-immunized patient, death from tetanus can be avoided by early recognition and timely intervention. The potential need for airway support and sedation should not be underestimated.

The authors’ case report should increase the awareness of the otolaryngologist when confronted with atypical cases of dysphagia and trismus and provides details of the recommended treatment regime.

Key words: Tetanus; Trismus; Dysphagia; Deglutition Disorders; Otolaryngology

Introduction

Tetanus is still prevalent in the developing world yet the vast majority of ENT surgeons in the United Kingdom will not have encountered a single case of this life-threatening disease.

The authors’ literature search has revealed only six case reports regarding the presentation of tetanus to an otolaryngologist in the western world within the last 30 years.^{1–6}

With an increase in global travel, these encounters may become more frequent. As a successful outcome is dependent on a prompt recognition of the clinical presentation and swift medical intervention, all physicians are urged to familiarize themselves with this rare but devastating infection.

In this article the authors describe a case of tetanus that was successfully managed in their Unit.

Intervention involved the prompt administration of tetanus toxoid, immunoglobulins and antibiotics with sedation and assisted ventilation, which necessitated tracheostomy. In due course the patient was successfully decannulated and made a full recovery.

Case report

A 45-year-old Arabic-speaking male from Saudi Arabia was visiting friends in the United Kingdom. He was referred to the authors’ department with a one-day history of fever, dysphagia and trismus.

At initial assessment it was suspected that he might have a peritonsillar abscess and the patient was admitted to the ward for quinsy drainage, intravenous antibiotics, rehydration, anti-pyretics and analgesia.

He was reviewed on the ward shortly after admission. Inspection of the oropharynx was difficult because of the severe trismus, but a view of the fauces did not reveal any obvious peritonsillar swelling. There had been no preceding history of sore throat.

The patient began to complain of back and loin pain and his legs became restless. The trismus produced a mild contortion of the patient’s facial expression, which was recognized as the classic ‘risus sardonicus’ and at this stage a diagnosis of tetanus was first suspected.

Through a translator direct questioning revealed that he had sustained a small cut on one of the toes of his right foot seven days prior to his presentation. This minor lesion was almost healed and there were no local signs of infection or inflammation. He had never been immunized against tetanus.

The regional infectious diseases unit at North Manchester General Hospital was contacted for advice. Immediate therapy was recommended: 0.5 ml of tetanus toxoid (Clostet® from Chiron Vaccine Evans), 1000 units of anti-tetanus immunoglobulin and one Mega unit of benzyl penicillin were given intravenously with a further 2000 units of immunoglobulin given intramuscularly.

The infectious diseases team also recommended that the patient should be reviewed by an anaesthetic team with a view to ventilatory support before transfer to their hospital for intensive care.

Despite these medical measures the patient continued to deteriorate becoming more agitated with painful muscle spasms. Whilst our anaesthetic colleagues were in attendance making their assessment he had respiratory arrest and was promptly intubated and ventilated. The patient was then transferred to the regional infectious

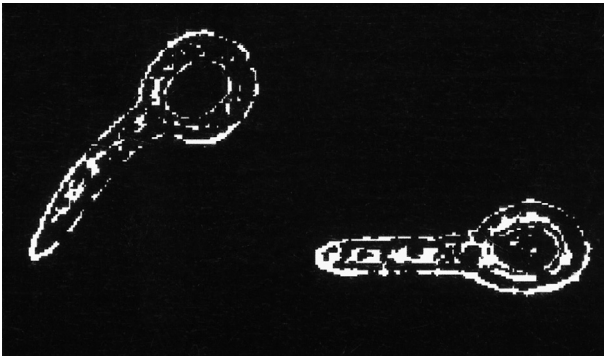


FIG. 1

Clostridium tetani showing their drumstick appearance. (Courtesy GlaxoSmithKline GmbH & Co.)

diseases unit (North Manchester General Hospital) with an accompanying anaesthetist.

He subsequently underwent a tracheostomy and remained sedated and ventilated for 29 days. After three weeks of further rehabilitation and convalescence he was discharged home.

Discussion

Although tetanus is an uncommon disease in developed countries, the global incidence is estimated to be 1 000 000 cases per year with a 45 per cent mortality.⁷

According to the Public Health Laboratory report, 116 cases of tetanus were registered in the UK between 1984 and 1991 of which 55 per cent were in patients aged over 64 years.⁸

The causative agent is the bacterium *Clostridium tetani*. This is an anaerobic, spore-forming, Gram positive rod commonly found in the soil and the faeces of domestic animals. It has a characteristic drumstick appearance on microscopy (Figure 1).

Tetanospasmin, an exotoxin released by this organism is the neurotoxin responsible for almost all of the clinical symptoms of tetanus. The toxin acts on the neuromuscular motor endplates, the brain, the spinal cord and the sympathetic nervous system and inhibits synaptic transmission by interfering with acetylcholine release. Inhibitory influences of the central nervous system are thus reduced, allowing simultaneous contraction of the agonist and antagonist muscles. Clinically this presents as muscular stiffness and rigidity, with trismus the commonest presenting symptom of tetanus.^{8,9}

Less specific symptoms include restlessness, irritability, headache, tachycardia, fever and malaise.

The diagnosis of tetanus is made entirely on clinical grounds. In up to 40 per cent of cases there is neither a history of injury nor is there a detectable source of infection.^{7,10}

Tetanus may occur in local, generalized or cephalic forms. Local tetanus is characterized by muscle spasm near the entry site of the organism. This may precede development of generalized tetanus. If the tetanus remains local, symptoms persist for weeks to months and can be expected to resolve without residual sequelae. The mortality for local tetanus is less than one per cent.

Cephalic tetanus presents after introduction of *Clostridium tetani* in the head and neck region. Among the cranial nerves the facial nerve is the most commonly affected, usually after an incubation period of one to two days.

Eighty per cent of cases present as generalized tetanus.

Initiating injuries include burns, deep punctures, dental extractions, compound fractures and chronic supportive otitis media.^{8,11}

A type of generalized tetanus deserving special mention is tetanus neonatorum. This is estimated to cause several 100 000 deaths worldwide annually.

Tetanus neonatorum usually begins in a newborn infant three to 10 days old and results from contamination of the umbilical stump or circumcision site by unclean instruments or dressings. The early manifestations are difficulty in suckling and excessive crying, which then progress to generalized tetanus. The mortality is as high as 60 per cent.¹⁰

- **Tetanus kills annually approximately 500 000 people worldwide**
- **The recommended treatment regimen is advised**
- **The otolaryngologist should consider the diagnosis in a non-immunized patient presenting as an atypical case of dysphagia and trismus**

The general principles of treatment for tetanus include neutralizing the toxin present in the bloodstream, minimizing the quantity of absorbed toxin and providing the patient with meticulous supportive care. Sedation plays an important role because even slight external stimuli can cause seizures in those with generalized tetanus.

In an effort to neutralize the toxin that is not bound to the neuromuscular tissue, human tetanus immunoglobulin (1000 units intravenously and 2000 units intramuscularly) should be administered as soon as the diagnosis is suspected. Penicillin has a bactericidal effect on *Clostridium tetani*. Benzyl penicillin is recommended in a dose of 1 000 000 units given intravenously every six hours for 10 days. Tetracycline or erythromycin are alternatives for penicillin allergic patients.

Wound care includes debridement of infected tissue in an attempt to lower the total amount of toxin absorbed and may lessen the severity and the duration of the illness. Supportive treatment in generalized tetanus often includes ventilation and this is facilitated in the medium to long term by tracheostomy.

The cause of death in tetanus is not always clear. Deaths may occur during a convulsion, after cardiac arrhythmia, or secondary to an indirect complication of the illness, such as pneumonia.

Finally the importance of vaccination must be emphasized. This is performed by intramuscular injection of 0.5 ml of adsorbed tetanus toxoid, as early as six weeks post-natal age, followed by a two further doses after six weeks and six months respectively. An adult who has received five doses is likely to have life-long immunity.

For clean wounds

Fully immunized individuals (those who have received a total of five doses of tetanus vaccine at appropriate intervals) and those whose primary immunization is complete (with boosters up-to-date) do not require tetanus vaccine; individuals whose primary immunization is incomplete or whose boosters are not up-to-date require a re-inforcing dose of an appropriate strength of a combined diphtheria and tetanus vaccine (followed by further doses as required to complete the schedule); non-immunized individuals (or whose immunization status is not known) should be given a dose of the vaccine immediately (followed by completion of the full course of the vaccine if records confirm the need).

For tetanus-prone wounds

Management is as for clean wounds with the addition of a dose of tetanus immunoglobulin given at a different site; in fully immunized individuals and those whose primary immunization is complete, the immunoglobulin may only be needed if the risk of the infection is considered to be especially high.

Antibacterial prophylaxis (benzylpenicillin, co-amoxiclav, or metronidazole) may also be required for tetanus-prone wounds.¹²

In summary, tetanus is a rare but potentially lethal condition which may present to the otolaryngologist. The disease should be considered in non-immunized patients presenting with an acute onset of trismus and dysphagia. Early recognition of the possibility of tetanus as a diagnosis will allow appropriate intervention with antimicrobial and immunological measures, sedation and airway support.

Acknowledgement

We are grateful to Mr T. Woolford, Consultant Otolaryngologist at Manchester Royal Infirmary for his valuable comments on the article.

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Mr J. Tahery takes responsibility for the integrity of the content of the paper.

Competing interests: None declared
