

Maternal Tetanus in Pregnancy: Medical Management and Spontaneous Vaginal Delivery at Term: A Case Report.

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Summary

A 30-year old pregnant woman presented at 30 weeks gestation with inability to open the mouth, eat or swallow and abdominal pain of two weeks duration having sustained abrasive injuries and laceration to the face 10 days earlier. Provocative spasms and risus sardonicus were found on examination. She was managed with intravenous infusions, metronidazole and diazepam. She resumed oral feeds two weeks later and was discharged home after 4 weeks of admission. She later had vaginal delivery at term with both mother and fetus being in good condition.

Introduction

Tetanus is a neurologic disorder characterized by increased muscle tone and spasm. It is caused by the release of a neurotoxin-tetanospasmin by *Clostridium tetani* following inoculation into a human host¹. Although *Clostridium tetani* is located everywhere, the disease is prevalent largely in underdeveloped, overcrowded and economically disadvantaged countries. Morbidity has greatly regressed in industrialized nations with incidence of 0.01-0.04 per 100,000 in U.S.A since 1976 with only 35 reported cases in 2000. However, developing countries are still severely affected (incidence is 10-50:100,000)². However, pregnancy-related infections and neonatal tetanus account for the majority of cases worldwide³.

Tetanus may occur following acute penetrating injuries such as puncture wounds, lacerations, abrasions or as a complication of decubitus ulcer, gangrene, abscess, burns, otitis media, septic abortion or childbirth^{4,5}. Tetanus associated with pregnancy usually follows unsafe abortion and delivery under unhygienic environment manifesting during the puerperium. However, the occurrence of tetanus during pregnancy is relatively uncommon. This informs the presentation of this patient who developed tetanus in early third trimester, was managed by the medical team and then subsequently had a normal delivery at term.

Case Report

Mrs I.Y is an unbooked 30-year old G²P⁰⁺¹ referred from the dental clinic of a neighbouring general hospital at 30 weeks gestation, with a 2-week history of inability to open the mouth, eat or swallow and abdominal pain. She had a history of fall into an open gutter 24 days before presentation and sustained lacerations on the face and forehead. She was taken to a private facility where the lacerations were sutured, analgesics and haematinics were given but neither antibiotics nor tetanus immunization administered. She was treated for pulmonary tuberculosis in 1997.

Examination revealed a young woman with healed scars on the forehead, nose and upper lip. She was dehydrated with grinning facial expression (risus sardonicus). The respiratory rate was 20 cycles/minute with transmitted sounds on anterior lung fields but no crepitations. The pulse rate was 88 beats/minute and blood pressure was 130/80 mmHg. Abdominal examination revealed board-like rigidity, with the fundal height and

the fetal parts being difficult to palpate. The fetal heart tone was heard with sonicaid at 148 beats / minute regular.

An assessment of maternal tetanus in pregnancy was made. She was managed with intravenous fluids, diazepam to control the seizures, anti-tetanus serum, and antibiotics. She was started on full anti-tetanus immunization

The outlined management was continued until trismus and spasm became markedly reduced 10 days later when swallow test with 50mls of clear fluid was performed. This was well tolerated and graded oral fluid with transition to soft and normal diet. She was subsequently discharged one week later for follow-up in the antenatal clinic. The remaining antenatal period was uneventful until 39 weeks gestation when she fell into spontaneous labour and had a normal delivery of a live male infant with birth weight 2.95kg and apgar score 7 and 9 at first and fifth minute respectively. The early neonatal period was uneventful and both mother and baby were discharged on the 6th day postpartum with the mother being counseled on proper cord care and the need to complete her anti-tetanus immunization.

Discussion

Tetanus remains a significant cause of maternal and neonatal morbidity and mortality in developing countries secondary to sporadic immunization and poor hygiene³. Most cases of tetanus are caused by direct contamination of wounds with clostridial spores as in the case presented. Incubation period varies from 3 days to 3 weeks. Wounds with low oxidation-reduction potential such as those with dead or devitalized tissues, a foreign body or active infection are ideal for germination of the spores and release of toxins. The tetanospasmin thus produced binds to the peripheral motor neuron terminals to block the release of inhibitory neurotransmitters (glycine and gamma aminobutyric acid) and synaptobrevin which leads to sustained neuronal discharge and muscle rigidity¹.

The diagnosis of tetanus is based on history and clinical characteristics. These were evident in the case presented as she was never vaccinated against tetanus during her present or previous pregnancy, had abrasions and lacerations that were not hygienically handled, trismus, risus sardonicus and rigid anterior abdominal wall. In extreme cases and with autonomic instability, there may be airway obstruction, urinary retention due to sphincteric spasm, constipation, respiratory and cardiac failure and these can result in poorer prognosis⁵. This may necessitate treatment with morphine, corticosteroids, adrenergic blocking agent or magnesium sulphate. Ventilatory support with endotracheal intubation may be necessary especially when long term airway management is anticipated^{3,5}. Relevant investigations include complete blood count which may not reveal any significant change as in this case, blood urea and electrolytes to correct any deficit ensuing from it and wound culture if surface is still raw for superimposed bacterial infection⁶.

The management principle of a pregnant woman with tetanus is similar to that of the non-pregnant individual. These include prompt prevention of further toxin production and its absorption, wound debridement, antibiotics therapy and aggressive supportive care⁷. Passive immunization with human tetanus immune globulin (HTIG) 3000-6000 i.u is potent in neutralizing circulating tetanospasmin, shortens the course of the tetanus and may lessen its severity⁸. However antitetanus serum can also be used when HTIG is not available and this is usually administered at a dose of 10,000 i.u. Multidisciplinary

management with the neurologist brought about change in antibiotics from penicillin to metronidazole which has been found to lessen disease progression, shorten hospitalization and better survival when compared to penicillin⁸. Supportive therapy may include ventilatory support which was not required in this case and pharmacological agents that treat reflex muscle spasms, rigidity and tetanus seizures. Benzodiazepines have emerged as the mainstay of symptomatic treatment for tetanus^{1,6}. The clinical outcome has been shown to be better when compared to magnesium sulphate in randomized control trials⁹. This informed the choice of diazepam in the case presented. Other useful spasmolytic agents include pancuronium, vecuronium, baclofen and dantrolene^{1,3}. The patient remained on parenteral nutrition with adequate care of her hydration status for ten days before commencement of oral intake. The resumption of oral feeds requires formation of new neurons with variable duration that may take months. The management of this case did not affect the fetus, albeit adversely which may suggest that tetanospasmin does not cross the placenta. The baby was not floppy at delivery because the interval of completing treatment to delivery was about 5 weeks. High case fatality rate is associated with extremes of age (neonate and elderly), delay in treatment, short incubation period, contaminated lesions of the head and face¹⁰. The survival of the mother (and fetus) despite presence of wounds on the face which is very close to the central nervous system and delay in seeking treatment makes this case noteworthy. Tetanus is a preventable disease which can be eradicated by proper hygiene and effective immunization protocol involving all pregnant women, their babies and susceptible individuals.

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