

Infection Prevention 2018: Cephalic tetanus in a 57-year old female: A case report- Roberto. P. Salvino - Asian Hospital and Medical Center, Philippines.

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This is a case of a 57-year old female with no known history of immunizations since childhood especially against tetanus who presented with jaw spasm without apparent ear infections or visible bodily injuries and trauma. Patient was admitted with a consideration of pterygomaxillary mass but later to be found out as severe spasm on the left masseter leading to diagnosis of tetanus infection. She continued to develop bilateral masseter spasms and dysphagia, accompanied by dyspnea that required tracheostomy. We report a case of cephalic tetanus with dysphagia, which was progressing to generalized tetanus but prompt intervention prevented disease progression.

According to the World Health Organization, the incidence of total reported cases of tetanus infection for 2017 is 1,057. Globally, there is a considerable decrease in the incidence and mortality rate of tetanus due to an overall improvement in the administration of vaccinations, as well as hygiene practices and antitoxin administration. This was significantly lesser than the total reported cases of tetanus seen in the year 1980 which is 3,080. Tetanus is caused by an exotoxin, tetanospasmin, produced by *Clostridium tetani*. Diagnosis of tetanus is clinical and can present as someone with trismus, risus sardonicus, neck stiffness, dysphagia, muscle rigidity and spasm, or it can also present as a localized form in which the spasms and rigidity are confined to an anatomic area of the injury. Cephalic tetanus is a very rare type of tetanus which accounts for only 0.9-3% of the total tetanus cases seen. About two-thirds of cephalic tetanus cases progress to generalized tetanus with bad prognosis. It frequently progresses to generalized tetanus and is associated with a high mortality. Thus, we report one of the few cases of

cephalic tetanus which presented with left neck stiffness and trismus. Presenting the case of a 57-year-old female, gardener, who consulted at the out-patient services due to difficulty opening her mouth. Condition began with left-sided neck stiffness 4 days prior to consult that gradually progressed to development of dysphagia to solids and liquids with difficulty opening her mouth. Neck stiffness worsened 2 days prior causing her to assume rightward neck flexion to alleviate pain. Trismus also started to occur at this time that made eating more difficult. Her illness was not associated with any history of trauma or other symptoms such as pain over gums or throat area, fever, difficulty in speaking or lateralizing signs. Persistence of symptoms prompted consult. Patient is known to frequently pick her teeth with a reusable metal pick. She has not sustained bodily injuries for the past several months. Past medical history and family history were unremarkable. Pertinent physical exam showed she was only able to open her mouth to 2.5cm, temporomandibular joint (TMJ) non-displaced, spastic masseter tone, no cervical lymphadenopathies, the rest of the physical exam was unremarkable. Her other cranial nerves were intact, and the rest of the neurological exam was also unremarkable. She was admitted under ENT service as a case of Pterygomaxillary mass; rule-out Tetanus infection. Diagnostic imaging with contrast MRI of the neck and oropharynx, revealed diffuse disc bulges at C3-C7 levels with stenosis, cervical disc dessication with slightly reversed cervical lordosis from spasm. Plain revealed an enlarged left parotid gland which was suspicious for infection. Chest xray was also unremarkable.

Blood tests of CBC (RBC 4.54 WBC 6.2, Hgb 137, Hct 0.41 Platelet 190, Segmenters 64, Lymphocytes 25, Monocytes 10, Eosinphils 1)

iCa, Na, K, Bun, Creatinine, aPTT were all normal. Tetanus infection was highly considered during this time patient was started on an initial antibiotic of clindamycin. She was given treatment of IV Metronidazole instead since treatment wise; It is the most preferred choice aside from penicillin. She was started and also treated with Tetanus hyperimmune globulin. She was closely monitored for signs of respiratory distress and placed on standby for intubation or emergency tracheostomy. Spasms of the masseter were treated with antispasmodic medications but worsening was eventually noted during the course, which was accompanied by dyspnea, oxygen desaturation, and tachycardia. Emergency tracheostomy had to be done to maintain a patent airway and she was placed on tracheal mask for oxygen support. She was thereafter transferred to the intensive care unit. The patient gradually improved and vital signs stabilized. Occurrence of mandibular spasm triggered by external stimuli such as lights or direct stimulation of the patient (such as suctioning) was lessened. There was no recurrence of oxygen desaturation thereafter. Treatment with metronidazole was completed for 14 days and physical therapy was continued. On the 21st hospital day, the patient was off O2 support, without any recurrences of the spasm episodes and was discharged without complications. Patient came back 3 weeks thereafter for tracheostomy removal and tolerated the procedure well. No further complications were noted and patient resumed usual activities of daily living after the removal of tracheostomy without any difficulties.

Cephalic tetanus can progress to a generalized form and can lead to high mortality rate (15-30%), therefore a high index of suspicion should be made in patients who present with trismus. Tetanus in itself is a clinical diagnosis: acute onset of hypertonia, especially when the muscles of the jaw and neck are involved, tetanus should be at the top of the differential diagnosis, even in previously immunized patients without a clear

portal of entry. Tetanus results from contamination of a wound by the bacterium *Clostridium Tetani* which form spores. It is an acute and often fatal disease is usually accompanied by generalized rigidity and convulsive spasms of the muscles. The spores are commonly found in the soil and in animal faeces. The spores would enter the body via wounds in the skin, and, after germination under low-oxygen conditions, they would excrete a potent toxin, tetanospasmin, which would go further into the blood stream. Although tetanus has become a rare disease in developed countries, it remains a potential fatal condition without prompt and aggressive management in third world countries. Elderly people who live in rural settings are especially vulnerable, because of the declining of immunity to tetanus and the high risk of infected injuries. Tetanus is said to be classified into four types: neonatal, generalized, which represents the most frequent form (more than 80%), local and cephalic. Cephalic tetanus is a rare type of localized tetanus characterized by the involvement of the cranial nerves in the facial area. Either local or cephalic tetanus may progress to the generalized form.

Based on the initial manifestations of the patient, tetanus was already considered early on in the disease course of the patient due to presence of neck spasm and trismus. Index of suspicion increased further knowing that she has not received any form of prior immunization due to the fact that the patient was born in 1961. Expanded programs on immunization were later established in the Philippines in the year 1976 according to the Philippines Department of Health. Diagnostic tests done revealed negative results for any mass lesions or malignancies and it was later found out that the mass was actually the severe spasm of the left masseter muscle. Despite of the primary consideration, the patient was still treated for tetanus in the first hospital day due to the high consideration of this diagnosis given her background and clinical presentation since tetanus

is a clinical diagnosis and is not a laboratory diagnosis. The patient was aggressively managed with starting tetanus antitoxin, Human Tetanus Hyperimmune Globulin administration, and eventual tracheostomy placement since dyspnea developed during her course in the hospital. The aggressive management of this patient was done since cases of cephalic tetanus are known to progress to the generalized type, and mortality with the cephalic type is reported to be high. Antispasmodics were also helpful in this case to control the episodes of spasms together with putting emphasis on decreasing external stimuli that can trigger the patient's spasm episodes. We therefore conclude that tetanus should be a high suspicion in cases which would present with trismus especially for those without a known history of immunization and in those who don't present with an apparent source of injury or portal of entry for developing tetanus infection.