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Case Report

Case Report: Localized Tetanus as Acute Chest Pain in Burundi

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Abstract

Background

Tetanus remains an important cause of morbidity and mortality across sub-Saharan Africa. Being a clinical diagnosis, atypical presentations present a challenge to diagnosis and thus to appropriate management.

Case Presentation

A 20-year-old Burundian male presented to a rural Burundian hospital with three days of intense, spasmodic chest pain. In the absence of confirmatory testing, he was started on therapeutic trials of omeprazole and diclofenac for the possible diagnoses of esophageal spasm and pericarditis. After several days of continued pain despite these interventions, trismus was noted only after the examining physician sought it specifically. The diagnosis of localized tetanus was made, with rapid clinical improvement after the application of standard therapy.

Conclusion

This report serves as a reminder to consider tetanus in any case of spasmodic pain without clear origin in any individual without up-to-date tetanus vaccination.

Keywords: Africa; Chest Pain; Localized Tetanus; Tetanus

Background

Tetanus is a toxin-mediated disease caused by Clostridium tetani, whose clinical description dates back thousands of years to ancient Egypt. [1] Across sub-saharan Africa, tetanus remains a significant cause of morbidity and mortality, with a case fatality rate of 45.5%. [2] Diagnosis of tetanus remains clinical, and atypical presentations present a particular challenge to diagnosis, and thus to appropriate management. Here we report a case of localized tetanus presenting as acute chest pain in Burundi.

Case Presentation

A 20-year-old Burundian male presented to a rural hospital in Gitega Province, Burundi, in August of 2016 with a 3-day history of intense thoracic pain.

The patient had initially consulted at another hospital in the area, which had performed a chest x-ray interpreted as cardiomegaly, and the patient was referred to Kibuye Hope Hospital for further management of a possible cardiac etiology.

On initial evaluation at the hospital, the patient had intense, episodic, spasmodic chest pain at rest, during which he was dyspneic. He had pain-free intervals lasting minutes at a time. He was found to have normal vital signs except for a blood pressures of 140/110 mmHg, likely due to his pain. Physical exam was unremarkable, with normal cardiopulmonary auscultation and no wounds noted. The chest x-ray from another hospital was evaluated, and a false cardiomegaly associated with poor inspiration was noted.

Complete blood count, HIV serology, and serum creatinine and urea were all within normal limits.

In light of his age and lack of cardiovascular risk factors, initial differential diagnosis included esophageal spasm and pericarditis. Given the lack of availability of other diagnostic modalities (e.g. ECG, echocardiogram), the patient was started on IV cimetidine and IV diclofenac as therapeutic trials for these etiologies. Symptomatic improvement on this regimen during the first four days of hospitalization was slow but promising, and all vital signs remained stable. Thus, a decision was made to transition the patient to oral omeprazole and ibuprofen.

On day five of hospitalization, the same symptom of intense, spasmodic chest pain worsened significantly. In light of the spasms, the evaluating physician asked the patient to open his mouth wide, and found that the patient had an inability to open the mouth beyond 2 centimeters. This lack of complete mouth opening had been present since admission but of no concern to the patient.

The specific finding of trismus changed the primary diagnosis of the spasmodic chest pain to localized tetanus. The patient was immediately started on IV metronidazole, IV diazepam, and a tetanus vaccination series. No tetanus immune globulin was available. The patient was transferred to a private room to limit possible tetanus triggers of light and sound.

Later the same day, significant improvement of the patient's spasms was noted. He completed a full course of IV metronidazole, and diazepam was eventually transitioned to oral therapy. With the exception of significant constipation that required oral bisacodyl and an enema, the patient had an uneventful rest of hospitalization and was discharged in good condition after a total of 14 days. Follow-up contact in 2019 confirmed a full recovery from the disease.

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Discussion

Tetanus is a toxin-mediated anaerobic bacterial infection that remains an important cause of morbidity and mortality across Africa. [1] Even in an age of significant coverage for childhood vaccinations against the disease, a 2016 meta-analysis showed an African case fatality rate for adult tetanus of 45.5% [3].

Tetanus remains a clinical diagnosis with a very specific clinical syndrome. Nevertheless, the number of cases may be grossly under-diagnosed and thus mistreated. For example, Kyu et al. estimated 290 non-neonatal tetanus deaths in Burundi in 2015. [4] However, a review of the national diagnostic registry, which uses an unequivocal ICD-10 codes for non-neonatal and non-obstetrical tetanus, showed only 45 cases in 2022 and 32 cases in 2023 [5].

Part of this diagnostic challenge may simply be the result of patients' difficulty in accessing qualified health personnel. However, as this case demonstrates, tetanus may present atypical features that require a high index of suspicion if the diagnosis is to be made. Atypical features of this case include the lack of a known port of entry, which is documented in 10-47% of cases, as well as localized spasms, in this case to the chest. [6,7] Localized tetanus, where muscle spasms are restricted to one part of the body, often around a port of entry, may be mistaken for dystonia, extrapyramidal rigidity, or another spastic condition. [8,9] There is little current data on the frequency of localized versus generalized tetanus, but this rare phenomenon has been documented for decades. Additionally, the classic sign of trismus, present in >90% of cases, was present for this patient and was key in making the correct diagnosis. One could thus technically classify this case as generalized. However, trismus was not a complaint of the patient and was discovered only after specific inquiry, thus making the clinical presentation localized. This further underlines the importance of a high index of suspicion for patients in endemic areas who present with spasmodic pain.

Another important diagnostic clue for this patient was his male gender. Previous studies have noted male gender as a risk factor for neonatal and non-neonatal tetanus. For example, a series of 158 adult cases in Ghana in 2003 noted 76.6% males, and a series of 68 adult patients in Ethiopia in 2012 noted 77.9% males. Even if all reasons for this difference are not clearly elucidated, we know that, in the age of global efforts to combat neonatal and maternal tetanus, the tetanus booster coverage of pregnant women has significantly increased, up to 90% of pregnant women in Burundi in 2015. [10] This patient was unlikely to have been vaccinated in childhood due to the prevalent civil instability in the country at that time. However, adult men like our patient, even if vaccinated in childhood, remain at a relatively elevated risk for tetanus disease as immunity wanes in adulthood, when compared to childbearing women.

Taken together, this case serves as an important reminder that tetanus needs to be considered for any patient who presents with spasmodic pain of unknown etiology without a history of up-to-date tetanus vaccination. When tetanus is considered, simple and universally available gestures like inquiring about trismus and possible ports of bacterial entry will help to make the clinical diagnosis more reliably.

As a final note, the treatment of this patient highlights the need of expanding the availability of tetanus immune globulin. This is considered a cornerstone of treatment for a disease with very high mortality, [11] but as this case shows, this medicine may not be available in some areas where tetanus disease is more prevalent.

Conclusion

Tetanus remains an important cause of morbidity and mortality in Africa. Since the diagnosis remains clinical, diagnosticians must retain a suspicion of tetanus in any case of otherwise unexplained muscle spasms. Universally available gestures such as asking about trismus, wounds and vaccination history may help elucidate tetanus in atypical presentations.

Author Contributions

McLaughlin E: Primary author and primary attending physician for patient. Kibinakanwa G: Collaborating author. Mbonimpa A: Physician assisted in care of patient.

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