minimize the deleterious effect of tobacco in bidi-rollers.

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Missed diagnosis of a wooden intra-orbital foreign body

Sheeja S John, MS, FRCS; Thaj A Rehman, MD; Deepa John, MS; Renu S Raju, MS

Intraorbital foreign bodies often present a confusing clinical picture. Wooden foreign bodies are notorious for remaining quiescent for a long time, before presenting with a variety of complications. The wound of entry may often be small and self-sealing. Wooden foreign bodies also show a propensity to break during attempted removal. Intraorbital wood is often not detected by standard diagnostic tests like the computed tomography scan, adding to the diagnostic dilemma. The presence of an intraorbital mass with a discharging sinus should evoke suspicion of a retained organic foreign body, regardless of the time interval between the trauma and current presentation. It is imperative to maintain a high index of suspicion in such cases to avoid misdiagnosis. We report an unusual case of a missed wooden intraorbital foreign body, which spontaneously extruded after five years.

Key words: Foreign body, orbit, orbital granuloma

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The orbit and its diseases often present a diagnostic dilemma to the ophthalmologist. Foreign bodies of the orbit may give rise to a diverse range of clinical problems, which may be perplexing to the most experienced ophthalmologist. Wooden foreign bodies are notorious for remaining quiescent for a long time, before presenting with a variety of complications. Cases have been reported in which the usual diagnostic techniques did not detect intraorbital wood. We report an unusual case of a missed wooden intraorbital foreign body, which spontaneously extruded after five years.

Case Report

A 19-year-old male presented to the casualty with a history of injury to his left eye by a palm leaf, which fell from a height of about 10 meters. A piece of the stalk had been removed from the wound at a local hospital earlier in the day. On examination, his vision was 20/20, the globe was intact and ocular movements were full. A superficial wound was noted at the left infraorbital margin. There was no evidence of residual foreign body. The wound was dressed and the patient was asked to review in the outpatient department.

The patient returned 18 months later with a swelling at the same site. On examination, his vision was still 20/20. There was a non-axial proptosis of the left eye with limitation of elevation. The globe was pushed 3 mm forwards and 2 mm upwards. A 2 x 1 cm firm, non-tender mass was present at the infraorbital margin. The posterior extent of the mass could not be defined. There was a small scar on the skin over the mass. Computed tomography (CT) scan of the orbit obtained in axial and coronal planes depicted a medium-sized soft tissue density mass in the inferomedial aspect of the left orbit. The mass involved the retrobulbar, intra and extracranal spaces, abutting and slightly displacing the optic nerve superiorly [Fig. 1A, B].

An incision biopsy of the mass at the infraorbital margin was done. Histopathological examination showed features of chronic inflammation with fibroblastic proliferation [Fig. 2A, B]. As the results of the investigations did not suggest the presence of a retained intraorbital foreign body, we considered other possible diagnoses like tuberculosis, sarcoidosis and idiopathic orbital inflammation. However, systemic examination did not reveal any clinical evidence of tuberculosis or sarcoidosis. Complete blood count, ESR, Mantoux test and Chest X-ray were within normal limits. As the patient was not very symptomatic at the time, we decided to keep him under observation for some time. However, he was lost to follow-up again.
He presented two years later with a discharging sinus at the site. At this point, we strongly suspected the presence of a residual foreign body and advised a magnetic resonance imaging (MRI) scan of the orbit. The patient, however, deferred the scan due to financial constraints. Meanwhile, the discharge from the sinus was sent for culture and sensitivity. It grew *Enterobacter* species, sensitive to ciprofloxacin, norfloxacin, lomefloxacin and gentamicin. The patient was started on systemic antibiotics (Tab. Ciprofloxacin 500 mg twice daily) and daily dressing of the sinus was continued. One week later, a foreign body, measuring 1.2 cm, was seen in the gauze when the dressing was removed. On follow-up, there was no further discharge from the sinus. So further active intervention was deferred at that point and the patient was advised regular follow-up. He defaulted again.

The patient came back to the hospital 18 months later. He said that he had been having recurrent discharge from the sinus, which was being dressed at a local hospital. Another piece of the wooden foreign body was seen on the gauze when the dressing was removed that day. He brought the specimen along to show us. It measured 9 mm [Fig. 3]. On follow-up, the swelling resolved and the sinus healed completely. His vision was still 20/20. We repeated a CT scan of the orbit a year later, which showed complete resolution of the mass [Fig. 4A, B].

**Discussion**

The clinical course of orbital foreign bodies differs depending on their composition. Most metallic foreign bodies remain quiescent for a long period of time without causing any problems. So the general recommendation is to leave them alone in the absence of specific indications for removal. However, organic foreign bodies like wood have a much higher incidence of potentially sight-threatening and life-threatening complications. They may remain dormant for a variable period of time and manifest with delayed-onset orbital granuloma, cellulitis, abscess or chronic draining sinus. Hence, surgical removal of organic intraorbital foreign bodies is recommended.

In our case, a piece of the foreign body had been removed after the initial trauma. When seen in our casualty on the evening of the same day, the wound looked superficial and there was no clinical evidence of a residual foreign body. However, multiple pieces of wood were extruded over five years. It is important to remember that wooden foreign bodies often break during attempted removal. The associated wound may be small and self-sealing. Therefore, if there is recurrence of clinical symptoms, especially, if there is a discharging sinus, the possibility of a retained foreign body should be considered.

Imaging and prompt exploration of the sinus may help in localizing and removing the foreign body. A CT scan is the standard diagnostic test, because it demonstrates most intraorbital foreign bodies and is safe in the presence of metallic foreign bodies. In our case, however, the CT scan did not show any evidence of the foreign body. Review of previous reports suggests that wood is often not detected on CT scan. Computed tomographic imaging relies on the differing radiodensities of tissues for their differentiation. The radiodensity of wood is...
variable and may be similar to that of the orbital tissues, which may account for the potential difficulty of recognition. The CT appearances seem related to the interval between injury and examination. In the acute stage, the very low density of wood can be confusing with low window settings, mimicking air bubbles. In the subacute stage, wood assumes a moderate density and may be difficult to distinguish from surrounding orbital fat. In the chronic stage, the density of wood can become higher than that of orbital muscle. It may be associated with a foreign-body reaction, which appears as a homogenous mass surrounding the dense wooden foreign body, with a density similar to the adjacent extraocular muscles. Spiral CT scanners have improved resolution and faster speed of acquisition of images. The fast image capture allows the scanning to occur with minimal motion artifact. In spite of these advantages, wooden intraocular foreign bodies could only be described as “probable intraocular foreign bodies” by neuroradiologists in a pilot study using a spiral CT scanner.

The MRI scans are better at demonstrating wooden foreign bodies. Magnetic resonance imaging depends on the density of protons in the tissue and their different relaxation times. These properties of wood are dissimilar enough from those of the soft tissue to allow differentiation. Therefore, it is recommended that MRI scan should be performed after a negative CT scan if there is a possibility of a wooden intraorbital foreign body. An MRI scan may be performed as the primary imaging modality if there is a definite history of a wooden intraorbital foreign body.

Several aspects of this case are interesting. The long latent period between injury and development of the orbital mass and sinus, the apparent removal of the foreign body from the wound after the initial trauma, the spontaneous extrusion of pieces of the foreign body twice with an interval of 18 months and complete resolution of the orbital mass on CT scan are distinctive features of this case. The entire sequence of events spanned over five years. This was partly due to the frequent defaulting on the part of the patient.

In conclusion, we would like to emphasize that intraorbital foreign bodies may often present a confusing clinical picture. It is important for the ophthalmologist, radiologist and pathologist to include foreign body granuloma among the differentials of an intraorbital mass. It is imperative to seek past and recent history of trauma and maintain a high index of suspicion in all such cases, regardless of the interval between the trauma and current presentation.

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