

Cervical Intradural Glass Fragment: A Rare Cause of Neuropathic Pain

Nöropatik Ağrının Nadir Bir Nedeni Olarak İntradural Cam Parçası

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ABSTRACT

Intradural foreign bodies after penetrating injuries are seen very rarely. Limited number of cases of glass fragments in the spinal canal were reported previously. Migration of foreign bodies and delayed onset of neurological symptoms due to foreign bodies were also reported. In this report a 33-year-old male patient was presented, who had penetration of glass fragments through oropharyngeal mucosa in to the spinal canal after crashing into a glass door. Glass fragment, which migrated through an unusual route, and reached cervical spinal intradural space, caused neuropathic pain with radicular symptoms, 21 years after the initial injury. This case report emphasize that after penetrating injuries of spine, foreign bodies may remain silent until the patient became symptomatic years after the initial injury and these foreign bodies may migrate to extreme distant and unexpected locations in the central nervous system.

KEYWORDS: Intradural foreign bodies, Migration, Glass, Neuropathic pain

ÖZ

Delici-kesici yaralanmalar sonrası intradural yabancı cisimler oldukça nadirdir. Omurilik kanalı içerisinde yabancı cisim olarak cam parçası görülmesi ve bunun yer değiştirerek geç dönemde semptomlara yol açması daha da nadirdir. Bu çalışmada, omurilik kanalı içerisinde yer değiştiren cam parçasına bağlı geç dönemde şikayetleri ortaya çıkan 33 yaşında bir erkek hasta sunulmuş; nadir görülmesi ve genel tecrübeye katkıda bulunmak amacıyla tartışılması amaçlanmıştır. Hastanın 21 yıl önce cam kapıya çarpma sonrası ağız mukozasına cam parçaları saplandığı öğrenilmiş ve bu parçaların servikal spinal intradural mesafeye ulaşarak hastada radiküler bulgularla birlikte nöropatik ağrıya sebep olduğu görülmüştür. Omuriliğin delici-kesici yaralanmalarında nadir de olsa yabancı cisimlerin omurilik kanalında kalabileceği ve bunların hem medüller hem de radiküler bulgulara yol açabileceği unutulmamalıdır. Orofarinks mukozasının delici-kesici yaralanmalarında da yabancı cisimlerin omurilik kanalına ulaşarak, erken dönemde veya yer değiştirme sonrası geç dönemde klinik bulgular ortaya çıkartabileceği gözden kaçırılmamalıdır.

ANAHTAR SÖZCÜKLER: Intradural yabancı cisim, Migrasyon, Cam, Nöropatik ağrı

INTRODUCTION

Penetrating spinal injuries most commonly occur due to missile, sharp knifelike objects and rarely due to glass (4, 15, 17, 18, 21). However, cases with intradural foreign bodies after penetrating injuries except missile injuries are very rare (5, 8, 9, 11, 24). There are only a few reported cases of glass fragments in the spinal canal (4, 13, 14, 22). Spontaneous migration of the foreign bodies in the spinal canal have been reported previously (2, 3, 10, 19). There are only a limited number of cases with late onset clinical symptoms due to intraspinal foreign bodies (3, 6, 9, 13, 14, 26). Herein a case of 33-year-old man was reported with a cervical intradural glass fragment, which migrated in the spinal canal and became symptomatic 21 years after the initial trauma.

CASE REPORT

A 33-year-old male patient was admitted with pain and dysaesthesia on his left arm for 10 years. His complaints had

become more severe in the last 6 months and in addition to that he noticed a new onset of weakness on his left arm. There was no history of recent trauma. From his history it was found out, that 21 years ago he had crashed into a glass door and glass fragments had penetrated through his mouth into the oropharyngeal mucosa. Right after the injury he was operated by an ear-nose-throat surgeon in order to clean the fragments. The patient was told that fragments were totally removed, but no further radiological evaluation had been made after the surgery.

Neurological examination revealed a 4/5 weakness of left biceps, triceps and wrist extension, dysaesthesia on C4-C5 dermatomes. Antero-posterior and lateral plain radiographs of cervical spine were normal. Computed tomography (CT) and magnetic resonance imaging (MRI) scans of cervical spine revealed a foreign body, consistent with glass, in the spinal canal at C5 level on the left side (Figure1A,B, 2A,B). Left C4 and C5 laminectomy was performed and the epidural space

was explored. There was no evidence of a foreign body in the epidural space. The dura was opened and a glass fragment of 14x6 mm size with 3 mm thickness, compressing the medulla and rootlets was found (Figure 3). There was no sign of arachnoiditis, and only a minimal reactionary thickening of C4

root was seen. In the early postoperative period the patient experienced significant pain relief. Two months after the surgery the patient had no complaints and his neurological examination was normal.



Figure 1: Axial (A) and sagittal (B) CT scans showing a high density object at C4-5 level in the spinal canal.

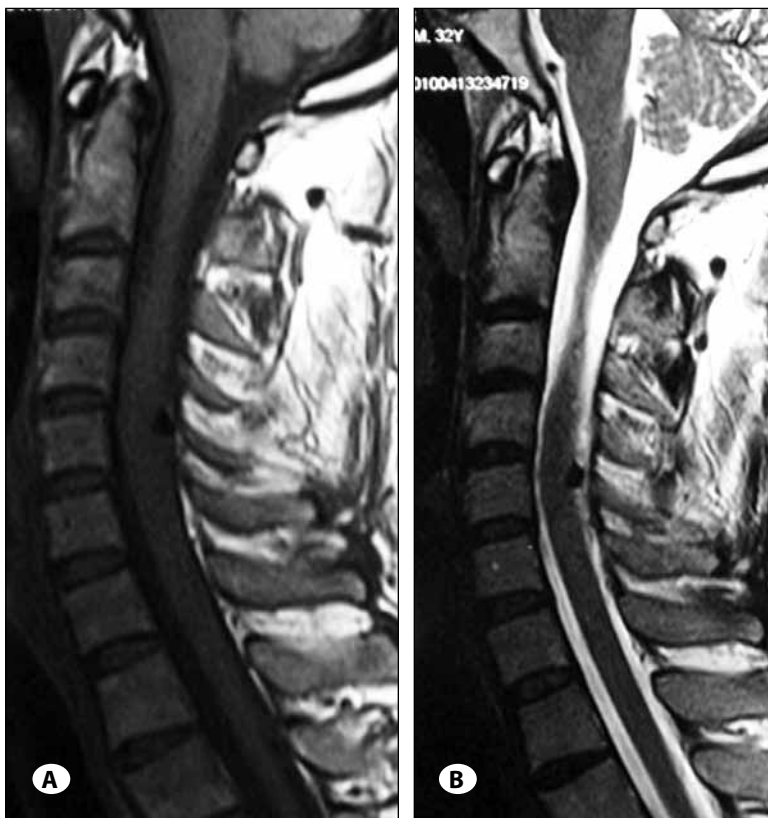


Figure 2: T1-weighted (A) and T2-weighted (B) sagittal MRI scans showing a hypointense lesion behind the spinal cord.

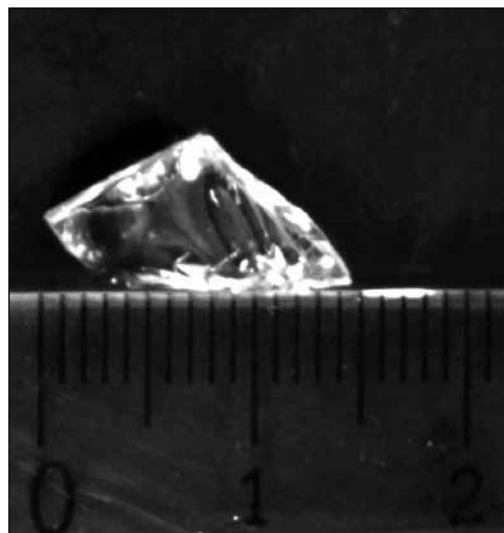


Figure 3: Postoperative image of the piece of glass.

DISCUSSION

Penetrating injuries of the spinal cord are relatively infrequent compared to blunt trauma. They mostly occur due to missile injuries, rarely to glass or wood fragment (1, 12, 16). Intradural foreign bodies due to these injuries are extremely rare. Common foreign bodies are bullets or metallic fragments in missile and rarely rock and earth pieces in mine injuries (5). Intraspinial glass fragments have been reported only in a limited number of cases (13, 14, 22). Foreign bodies that stay silent for months or years until they cause neurological symptoms due to migration in the spinal canal are even rarer (6, 9, 11, 13, 14, 22, 25).

Traditionally surgery is indicated because of risk of toxicity if the foreign body is made of lead or copper even when there are no progressive neurological symptoms. For sharp foreign bodies and/or retained canal fragments surgery is indicated immediately after trauma to prevent neurological deterioration independent from the spinal level of injury (23). In our case the time interval between the initial trauma and the onset of neurological symptoms was relatively long at 21 years. Oertel et al. reported a case of a glass fragment in the spinal canal, which became symptomatic 12 years after the injury, probably because of degenerative changes of the spine (14). We want to underline that a previously asymptomatic foreign body in the spinal canal may become symptomatic and this is independent from the length of the asymptomatic time period. New symptoms may occur due to compression to neural elements even years after the injury. It has been described that a subarachnoidal foreign body may cause radicular symptoms (10). Our case also presented with radicular symptoms, but it has to be considered that these foreign bodies might present also with myelopathy (9, 25).

The route of migration of the glass fragment was also extraordinary in this case. Spontaneous migration of foreign bodies in the spinal canal has been previously described (3, 10, 19).

The migration risk is higher for injuries below the T12 spinal level, but cranial foreign bodies might also migrate to the spinal canal (7). Transoral penetration of foreign bodies to the spinal canal are extremely rare and this kind of injury happens more commonly in Japan due to penetration of half-split chopsticks into the mouth (20).

Taniura et al. published an interesting case where the chopstick penetrated transorally between the dens and basion, and reached the subarachnoid space at the medulla oblongata (20). The trajectory of the foreign body was different in our case, but it demonstrates that transorally penetrated foreign bodies might reach the central nervous system. In this case, the glass fragment entered from patient's mouth and crossed through the oropharyngeal mucosa. It probably passed through the anterior longitudinal ligament and entered the spinal canal via the C2-3 disc interspace, between the vertebral arteries without causing any vascular damage. Then it migrated from the anterior subarachnoidal

space to the posterior subarachnoidal space, until it reached the C4-5 vertebra level, where it became symptomatic. The asymptomatic migration can be explained by the wider diameter of the upper cervical spinal canal. The lordotic angle at the C4-5 level did not allow the glass fragment's further migration to the lower cervical spine. It must be considered foreign bodies might be found in unexpected locations within spinal cord irrespective of the entrance wound.

Plain radiographs and CT are effective methods to investigate both metallic and glass fragments. In case of a metallic foreign body, MRI can cause damage in the neural structures. On the other hand, MRI might provide the most valuable and precise data about the location of glass fragments. In our case it was expected that the glass fragment would be found epidurally, and the CT scan demonstrated the glass fragment adjacent to lamina. However, careful evaluation of the MRI scan showed that the glass fragment was located intradurally. Considering the size of the intradural glass fragment (14x6x3 mm) in our case, it is very interesting that the patient remained asymptomatic for such a long time period.

It is important to underline foreign bodies may remain silent after penetrating injuries of spine until the patient becomes symptomatic years after the initial injury and foreign bodies may migrate to extreme distant and unexpected locations in the central nervous system.

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