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Cough-induced paraplegia secondary to spontaneous spinal epidural hematoma: A case report

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ABSTRACT

A spontaneous spinal epidural hematoma (SSEH) is a rare but significant neurological condition with hemorrhage leading to spinal cord damage, causing irreversible deficits. Its etiology is related to coagulopathy, vascular malformation, neoplasms, infections, minor vertebral traumas, and idiopathic causes. This is a case of a 57-year-old female who developed sudden onset paraplegia secondary to an episode of intractable cough, due to the development of spontaneous spinal epidural hematoma. The patient underwent an emergent decompressive laminectomy after a diagnosis of acute spinal epidural hematoma via magnetic resonance imaging (MRI) spine. This case is worth reporting based on the rare and unusual presentation of a serious life-threatening condition.

Keywords: Cough, Paraplegia, Spontaneous spinal epidural hematoma (SSEH)

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INTRODUCTION

Spontaneous spinal epidural hematoma (SSEH) is accumulation of blood in the epidural space causing compression of the spinal cord or spinal nerve roots leading to acute neurological deficits [1]. The "Spontaneous" term is defined as atraumatic etiology, which accounts for approximately 60% of the case. The atraumatic etiology can be multifactorial, such as straining, sneezing, coughing, lifting, hypertension, neoplasm, hemophilia, and arteriovenous malformation [1]. We present a case of spontaneous spinal epidural hematoma caused due to coughing.

CASE REPORT

A 57-year-old woman was admitted to the hospital because of sudden onset of loss of function and sensation in her lower extremities that developed 4 hours prior to her admission after she woke up with intractable episode of productive cough on the day of presentation. She reported having a cough and flu like symptoms for the last one week. She denied any fever, hemoptysis, weight loss, incontinence, and recent surgery, weight lifting, or trauma history. Her past medical history was significant for diabetes mellitus, hyperlipidemia, and obesity. On physical exam, the patient was found to have absent sensation to pinprick below her nipples, weak rectal tone, and loss of motor function in her bilateral lower extremities. She was hemodynamically stable and no laboratory abnormality was found. Initial chest X-ray was unremarkable (Figure 1). Magnetic resonance imaging of the spine was significant for epidural lobulated mass extending from the T4-5 disc level to the T6-7 disc level. This mass along with the congenitally small canal and disc bulge resulted in severe central stenosis with moderate cord deformity but no definite cord signal change was observed, highly suspicious for hemorrhage (Figure 2).

Immediate neurosurgery evaluation was consulted, and the patient underwent an urgent T4-7 decompressive laminectomy with evacuation of epidural hematoma.

The patient was transferred to the intensive care unit (ICU) postoperatively for closer monitoring and critical management. Her symptoms slightly improved after the procedure with symptomatic treatment. Pathology report was consistent with early organization of clotted blood representing acute hematoma. Physical therapy was initiated during the hospital course and later was transferred to the acute rehabilitation facility for recovery with scheduled follow-up with Neurology Clinic. However, the patient did not follow up with our Neurology Clinic.

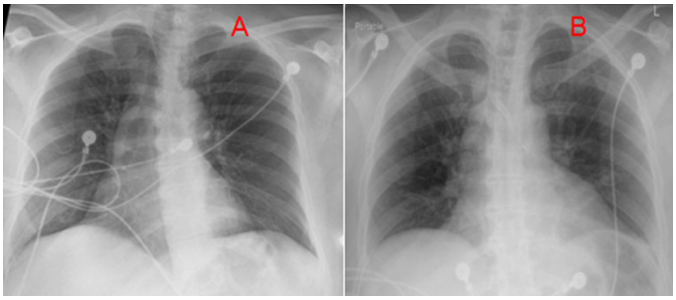

Figure 1: Chest X-ray of (A) pre- and (B) post-laminectomy and decompressive surgery of SSEH. (1A) Normal chest X-ray. (1B) Minimal left side basal atelectasis.

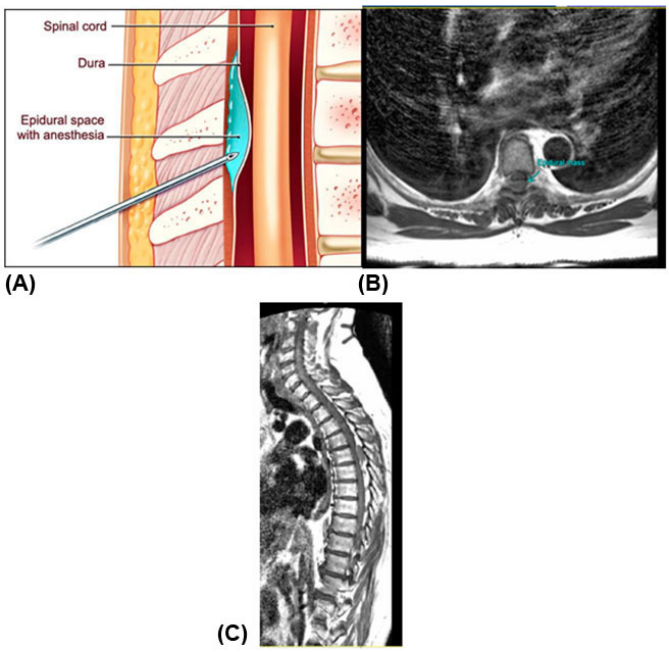

Figure 2: Anatomy of epidural space (A) and MRI thoracic spine in axial (B) and sagittal sections (C) significant for epidural lobulated mass (arrow) extending from the T4-5 disc level to the T6-7 disc level compressing on spinal cord.

DISCUSSION

Spontaneous spinal epidural hematoma (SSEH) is a rare but emergent condition. It may result in paraplegia, quadriplegia, and even death. The spontaneous development of spinal epidural hematomas is most frequent after the fourth or fifth decade [1]. The male/female ratio is 1:4 [2]. Statistically, idiopathic cases account for approximate 40% of all cases [2]. The most common site of a spontaneous spinal epidural hematoma is the cervicothoracic region or thoracolumbar region [1, 3].

The most common presentation for SSEH is sudden stabbing neck pain or sudden back pain that progresses to paralysis depending on the level of the lesion and the nerve root [4]. Certain precipitating factors, including anticoagulant therapy, therapeutic thrombolysis, long-term aspirin use, and vascular malformation appear to be correlated with spontaneous spinal epidural hematomas [5, 6].

Coughing has been shown to result in large and abrupt cerebrospinal fluid (CSF) pressure fluctuations, which arise, by communication between the CSF and intrathoracic pressures, through the venous system [7, 8]. Most researchers assert that SSEHs arise from the epidural venous plexus in the spinal epidural space because it lacks venous valves, and undulating pressure from the thoracic and abdominal cavities can impact it directly [1, 2, 9].

Currently, MRI is considered as the first choice diagnostic method for SSEH and early surgical intervention is the general treatment for spontaneous spinal epidural hematomas [9]. For the treatment of SSEHs, operation should be considered as soon as possible unless the neurological deficit takes a favorable turn in the earlier period or the patient also has coagulopathy. Prompt diagnosis and emergent decompressive surgical management have been recommended to prevent mortality and morbidity. In certain cases, corticosteroids have been administered in certain SSEH cases. Upon literature review, there is a small study performed by Kim et al. where 5 out of 15 patients received low dose corticosteroids instead of surgical intervention [10]. Unfortunately, due to small number of patients, it is difficult to draw a firm conclusion that corticosteroids have better outcome [10]. Hence, our patient did not receive any corticosteroids but went emergent surgical decompression.

CONCLUSION

In conclusion, spontaneous spinal epidural hematoma can occur with a minor trauma, such as increase in intra-spinal pressure caused by intractable cough, is a rare case entity, which should be treated as neurosurgical emergency. We highlight this case as a reminder that etiological factors deemed “zebras” have their day and should remain in the differential diagnosis of spontaneous spinal epidural hematomas no matter how rare they are.

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Author Contributions

Waheed Abdul – Conception of the work, Design of the work, Interpretation of data, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Ali Haq – Acquisition of data, Analysis of data, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Jyoti Matta – Acquisition of data, Analysis of data, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Guarantor of Submission

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Written informed consent was obtained from the patient for publication of this article.

Conflict of Interest

Authors declare no conflict of interest.

Data Availability

All relevant data are within the paper and its Supporting Information files.