

# Spontaneous Spinal Epidural Hematoma: A Concise Review

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**Abstract:** Spontaneous spinal epidural hematoma (SSEH) is an entity of rarity. It usually has an acute onset presenting to the emergency department with profound neurological deficits. From the term we infer that the blood accumulating in the spinal column is not due to any traumatic cause. During the episode of spontaneous bleeding, there is a positive correlation with increase in the pressures of the epidural space. Replacing myelography and CT scan, MRI has earned the name for being the gold standard for the diagnosis of SSEH. In case of an individual without any classical explanation for developing sudden neurological deficits with excruciating painful symptoms, SSEH should be kept in mind as a potential differential diagnosis. If SSEH is suspected, MRI should be done which is the diagnostic modality of choice. Surgical evacuation of the hematoma and decompression with laminectomy are considered to be the ideal procedures to be performed following the diagnosis. Since SSEH is a dreaded problem causing rapid deterioration it is highly advised to take up the patient for a detailed diagnosis and timely interventional procedures even though the clinical symptomatology remains to be highly unique in different individuals.

In this article, we discuss from the literature, the etiology, pathophysiology, diagnosis, treatment protocols and prognostic factors regarding SSEH, a disease of low incidence yet a high mortality, demanding a detailed discussion and awareness among the medical professionals.

## BACKGROUND

Spontaneous spinal epidural hematoma (SSEH) is an entity of rarity. It usually has an acute onset presenting to the emergency department with profound neurological deficits. The acute nature of its presentation demands for rapidity in diagnosis and management in order to prevent complications in both sensory and motor systems. SSEH occurs due to blood getting accumulated in the spinal column compressing the nerves emerging from the main trunk.

From the term we infer that the blood accumulating in the spinal column is not due to any traumatic cause. The possible factors leading to SSEH are disorders with factor deficiencies, blood discrasia, malformations in the arterio venous channels, increased blood pressure, the usage of medicines like blood thinners etc.

By far, it has been delineated that hemorrhage for the venous channels might be the prime source for the development of this condition. This is in congruence with the fact that veins situated in the epidural are unprotected from the pressure variations transmitted from the abdomen and thorax. Rise in such compartmental pressure would dramatically raise the venous pressure initiating their rupture in case of susceptible individuals. It is postulated that this theory regarding its causal relationship might be associated with some strenuous activity during the occurrence of the initial attack. Hemorrhagic etiology as a causal factor has also been long debated.

## ETIOLOGICAL FACTORS:

SSEH most often presents as an acute event. Since it has not been dealt in the daily practice, health care professionals do not keep this as a first differential diagnosis.

There are few instances in the past wherein the progression of SSEH has been denoted to be slower and so the neurological manifestations. Yet, the major and the common presenting symptomatology still remain to be that of acutely progressing spinal column compressive symptoms. In almost all the cases, there is an excruciating severe pain that stays locally or irradiates to the nearby areas.

There are cases in the literature wherein spontaneously recovered cases have been described. Yet most of the cases fall into the category of that requiring immediate operative management. In such cases, any delay in the management would be detrimental causing irreversible neural damage. The etiological factors pertaining to SSEH are varied which includes pregnant states, constant increase in the blood pressure and other compartmental pressures, bleeding disorders, angiomas of the vertebral column, pathological thickening of the blood vessels, usage of blood thinners etc. Trauma causing rupture of an already pathologically affected blood vessel is a probable etiological factor.

During the episode of spontaneous bleeding, there is a positive correlation with increase in the pressures of the epidural space which occurs as a result of excessive exertional activities like vomiting, coughing, voiding and sneezing. On the contrary, the bleeding has also occurred without any exertional activities.

Literatures have also suggested arterial source for the bleed as a plausible causation factor. Furthermore, the most intriguing factor to be noted is that even though there is a distinct variation between arterial and the venous source, it is only of an academic view point and it doesn't have any impact regarding the prognosis of the condition. The clinical perspective behind this distinction holds no much significance.

One of the most suggestive etiologies that has become a common and a rapidly emerging factor in the recent times is the usage of oral anticoagulants. Therefore the usage of blood thinners would increase the possibilities of spontaneous bleed in the already susceptible individuals.

It has been witnessed in many instances that among the patients who had SSEH, a large majority of them had preceded some or the other kind of straining related events.

#### **DIAGNOSTIC MODALITIES IN SSEH:**

Myelography was once the method of choice before newer technologies came into play. Myelography was a time consuming not so specific, invasive procedure. As an inference, myelography was only able to show the existence of a mass in the epidural space and its ability to localize the lesion was highly inaccurate. For these reasons, it is not in use these times. Next to myelography, CT scan was for a long time a modality of choice in diagnosing SSEH. CT scan in comparison to myelography has higher specificity.

Nowadays with the advent of MRI, in case a hematoma is kept in the differential diagnosis, then MRI should be done at the earliest. Replacing myelography and CT scan, MRI has earned the name for being the gold standard for the diagnosis of SSEH. Being a noninvasive, quick to do that arrives at a precise diagnosis delineating the exact location of the hematoma; MRI is the best with regards to the specificity.

#### **Management Methodology in SSEH:**

Surgical evacuation of the hematoma and decompression with laminectomy are considered to be the ideal procedures to be performed following the diagnosis.

If the cases have been identified to be SSEH presenting with deficits, immediate decompressive surgery is to be performed for speedy recovery.

In case the patient presents with very minimal deficits, then the neurosurgeon can go for expectant management along with radiological follow up during the entire course of observation.

#### **Prognostic Factors:**

The two important implications regarding the prognosis of the condition are the extent of neurological deficit in the patient and the time taken between the bleed and the definitive management. Immediate definitive management like a surgical procedure must be resorted to in the first place in order to reverse the deficits optimally to be operated within 48 hours after the beginning of symptomatology in the patients.

The location of the bleed and the neural deficits before the definitive management are the two main factors determining the rate of recovery in the postoperative period.

In cases of cervical hematoma in a hypertensive patient, the mortality rate is very high. The blood thinners add up to higher mortality in those patients.

The neurological deficits due to SSEH respond well during the recovery phase if the definitive management has been started within the golden hour thereby reversal of the deficit is highly probable.

#### **CONCLUSION:**

Spontaneous Spinal Epidural Hematoma (SSEH) has an extremely low incidence rates. This is evident from the fact that a comparative study of other mass lesions in the same region yielded a much higher incidence rates.

Since SSEH is a dreaded problem causing rapid deterioration it is highly advised to take up the patient for a detailed diagnosis and timely interventional procedures even though the clinical symptomatology remains to be highly unique in different individuals.

In case of an individual without any classical explanation for developing sudden neurological deficits with excruciating painful symptoms, SSEH should be kept in mind as a potential differential diagnosis. If SSEH is suspected, MRI should be done which is the diagnostic modality of choice.

The excruciating pain that occurs due to the compressive nature of SSEH can result in neurogenic claudication. In such cases, in order to prevent the claudication from increasing further, surgical management should be resorted.

In some rare instances, spontaneous recovery has also been documented showing that intervention through surgery is not always the necessary protocol. Hence individualized treatment protocol must be followed depending on the symptoms and acuteness of the onset keeping in minds both the risk and benefits of surgery.

In most of the cases, the compressive symptoms should be taken care by surgical evacuation and the recovery can be facilitated by rehabilitative measures after the definitive management. This step wise protocol will significantly improve the final outcome. Thereby, we recommend an individualized protocol in the treatment of Spontaneous Spinal Epidural Hematoma.

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