

# Posttraumatic Cervicovertebral Junction Acute Subdural Hematoma and Cisterna Magna Subarachnoid Hemorrhage Presenting with Progressive Hydrocephalus

## Abstract

Herein, we discuss a rare case of posttraumatic cervicovertebral junction subdural hematoma and associated cisterna magna subarachnoid hemorrhage. Due to progression in the hydrocephalus, he has undergone midline suboccipital craniectomy and evacuation of the hematoma. The patient made an uneventful recovery.

**Keywords:** *Posterior fossa, subarachnoid hemorrhage, subdural hematoma*

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## Introduction

Traumatic posterior fossa hematoma is a rare condition accounting to <1% of head injured patients.<sup>[1-3]</sup> Traumatic craniovertebral (CV) junction subdural hematoma (SDH) and associated cisterna magna subarachnoid hemorrhage (SAH) is a very rare entity with only two cases of CV junction SDH reported so far.<sup>[4,5]</sup> The risk of acute hydrocephalus and tonsillar herniation due to progressing hematoma are two deadly consequences that can follow such condition. Herein, we discuss one such case who presented after sudden jolting movement in his neck followed by a severe headache. We discuss the probable etiology and management algorithm followed during the management of the case.

## Case Report

A 35-year-old male from a remote village in Nawalparasi, Nepal, presented to our Emergency Department following a sudden jolting movement sustained at the back of the neck while he was driving a tractor. He did not report any loss of consciousness and episodes of vomiting. He did not complain of dizziness, fall attacks, tinnitus, and vertigo. He only complaint of the persistent bulking type of headache, especially in the nape of his neck. A headache was resistant to over the counter analgesics. He had no similar episodes of headache in the past. No significant past other medical or surgical illnesses were elicited. His Glasgow Coma

Scale was 15/15. Bilateral pupils were equal and reacting. Neck rigidity was present. His vital parameters were within normal range. There was no nystagmus, and cerebellar signs were absent. His cranial nerves examination was normal. The urgent computed tomography (CT) head scan revealed foramen magnum territory SDH and cisterna magna SAH [Figure 1]. CT angiography performed did not reveal any associated aneurysm in the posterior circulation and showed hypoplastic right vertebral with predominant supply from the left vertebral artery. Their extra cranial course in C1 was normal. The patient was started on tablet nimodipine 60 mg postoperative 4 hourly for preventing vasospasm. The patient was admitted and was rigorously monitored for features of raised intracranial pressure. After 12 h of admission, the patient complaint of severe intolerable headache multiple episodes of vomiting with associated bradycardia. Urgent repeat CT head revealed features of evolving hydrocephalus [Figure 2], and there was compression in the craniovertebral junction. The patient and his relatives were counseled regarding the high risk of tonsillar herniation and brain stem compression. The external ventricular drain placement was deferred due to the fact that it could predispose to the progression of the upward transtentorial herniation. The patient underwent posterior suboccipital craniectomy exposing up to C2 arch. Dura was opened, and there was evidence of

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SDH in the CV junction and SAH in the cisterna magna. The hematoma was completely evacuated. Cerebellum was completely lax and pulsatile after the procedure. There was minimal oozing from the hemispheric branch of the posterior inferior cerebellar artery (PICA) which was controlled. The dura was sealed, and the wound closed in layers. The patient was extubated. Postoperatively, there was complete resolution in the headache and repeat scan showed complete evacuation of the SDH and the SAH with resolution in the hydrocephalus [Figure 3]. The patient was

discharged home on the 7<sup>th</sup> operative day. The patient was followed up for 2 weeks later with no symptoms. The dose of nimodipine was tapered off in 3 weeks.

## Discussion

Traumatic posterior fossa SDH is rare epiphenomenon with high mortality of 33–100%.<sup>[1]</sup> Mostly SDH is of venous origin. One reported case of traumatic CV junction SDH reported the seepage of extradural hematoma (EDH) through the lacerated dura to be the cause of the SDH.<sup>[4]</sup> In our case, there was no fracture in the C1, C2 arches, no EDH, and the dura was intact. The associated cisterna magna SAH made us perform angiography to rule out associated aneurysm of the PICA territory. It also provides us valuable information regarding the extradural course of vertebral artery along the superior surface of C1 arch so as to plan our possible suboccipital craniectomy C1 arch removal. Our patient had worsening of headache with repeat scan showing progression in the hydrocephalus thereby had to make the decision to evacuate the hematoma. Due to the rarity of the entity, only few recommendation have been regarding the management of posterior SDH.<sup>[1]</sup> In our case, we made the midline suboccipital craniectomy opened the dura and evacuated the SDH and the SAH in the cisterna magna.

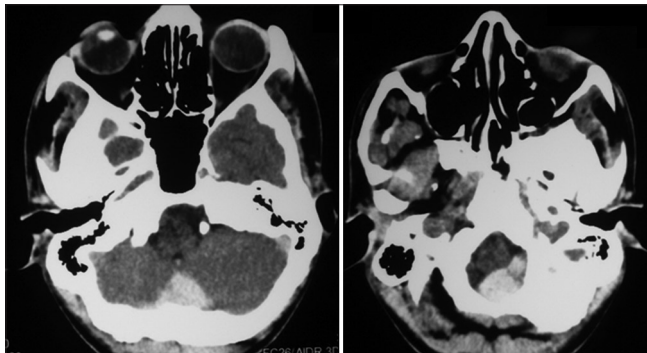


Figure 1: Computed tomography head showing cervicovertebral junction subdural hematoma and cisterna magna subarachnoid hemorrhage



Figure 2: Repeat computed tomography scan showing evidence of progressive hydrocephalus

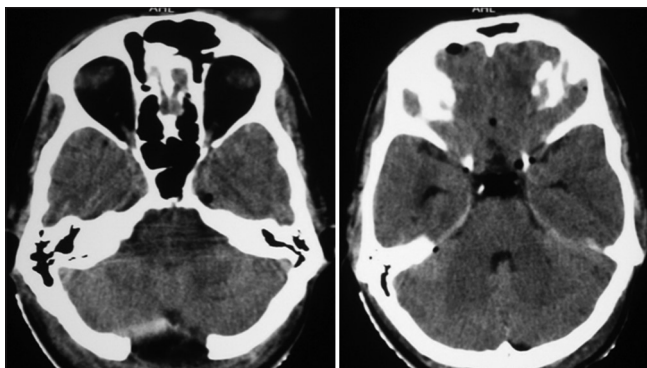


Figure 3: Postoperative scan showing complete evacuation of the hematoma and subarachnoid hemorrhage and resolution of hydrocephalus

## Conclusion

Stringent care needs to be taken for early intervention in cases of posterior fossa SDH so as to prevent tonsillar herniation and acute hydrocephalus. In cases of SAH, it is advisable to obtain angiography to rule out associated posterior circulation aneurysm.

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## Conflicts of interest

There are no conflicts of interest.

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