



PRIMARY INTRAVENTRICULAR HEMORRHAGE: A RARE CADAVERIC FINDING AND ITS CLINICAL IMPLICATIONS

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ABSTRACT

Intraventricular hemorrhage (IVH), characterized by bleeding into the brain's ventricles, is often associated with intraparenchymal hematomas or subarachnoid hemorrhages. Historically diagnosed post-mortem, modern imaging now identifies IVH with non-specific symptoms or as an incidental finding. This case report details the discovery of primary intraventricular hemorrhage (PIVH) in an elderly male cadaver during a routine dissection at Dr. RPGMC Kangra. The dissection revealed rusty, brownish discoloration throughout the lateral, third, and fourth ventricles, along with midline shifting and compression of adjacent structures. PIVH, a rare and severe condition primarily linked to hypertension and vascular malformations, accounts for $\leq 3\%$ of intracerebral hemorrhages in adults. Its prognosis is especially poor in the elderly. The distinctive coloration results from hemoglobin degradation and iron deposition. This case underscores the critical need for advanced clinical techniques, including minimally invasive clot removal and recombinant tissue plasminogen activator therapy, to improve survival and long-term outcomes in IVH patients.

KEY WORDS: Intraventricular hemorrhage (IVH), primary intraventricular hemorrhage (PIVH), cadaveric findings, cerebral hemorrhages.

INTRODUCTION

Intraventricular hemorrhage (IVH) is a medical condition characterized by bleeding into the brain's fluid-filled ventricles, often linked with intraparenchymal hematomas or subarachnoid hemorrhage. Historically recognized postmortem due to its association with sudden coma and death, IVH is now more frequently diagnosed thanks to advances in imaging techniques. These advancements have revealed that IVH can present with nonspecific symptoms like headache, nausea, altered mental status, and focal neurological deficits, making it sometimes an incidental radiological finding. Primary IVH, a subtype without a parenchymal hemorrhagic component, remains rare and is primarily associated with hypertension and vascular malformations. This article details a case of IVH discovered during the routine dissection of an elderly male cadaver, providing insights into its clinical implications and the significance of recognizing vascular origins. Understanding the mechanisms and improving clinical methods for IVH

management are crucial for enhancing patient outcomes and survival rates.

CASE REPORT

During routine dissection of brain of elderly male cadaver in accordance with ethical standards at the department of anatomy at Dr. RPGMC Kangra at Tanda, intraventricular hemorrhage was observed. After dissection of scalp, skull bones were separated to open the cranial cavity. Meningeal layers were intact. After removal of meningeal layers, cerebral hemispheres were seen. Superolateral and inferior surfaces of both hemispheres were normal. In horizontal section of cerebral hemispheres, rusty, brownish colour was observed in the cavity of lateral ventricles on both sides which was extended in each horn of lateral ventricle, third and fourth ventricle. Midline shifting was observed. Compression and colour changes were observed in adjoining walls of ventricles.



DISCUSSION

In infants, intraventricular haemorrhage is a frequent complication of prematurity. In adults, isolated intraventricular haemorrhage is rare, accounting for $\leq 3\%$ of intracerebral haemorrhages. The lesions most frequently detected as underlying intraventricular haemorrhage are of vascular origin. Arteriovenous malformations can lead to haemorrhage restricted to the ventricular system and have been identified as causes 20–25% of cases. The rupture of aneurysms of the posteroinferior

cerebellar artery is often associated with Intraventricular haemorrhage (up to 95%). Aneurysms of the anterior communicating artery and of the basilar tip may directly rupture into the ventricular system through the lamina rostralis and the floor of the third ventricle, respectively. Hemoglobin degradation leading to iron deposition gives rusty, brownish colour.



CONCLUSION

Intraventricular hemorrhage (IVH), though rare, represents a severe clinical condition with significant early mortality, particularly in elderly patients. This case report highlights the presence of IVH in an elderly male cadaver, underscoring the importance of recognizing its association with underlying vascular abnormalities, such as hypertension and vascular malformations. The characteristic rusty, brownish discoloration observed in the ventricles is indicative of hemoglobin degradation and iron deposition, a key diagnostic feature. Despite the poor prognosis, especially in older individuals, advancements in minimally invasive techniques for clot removal and the use of recombinant tissue plasminogen activator-mediated clot lysis offer potential for improved outcomes. Enhanced understanding and application of these clinical methods are essential to improve survival rates and long-term functional recovery in patients with IVH. Continued research and education on the identification and management of IVH are crucial for advancing treatment and improving the prognosis of this serious condition.

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