

Case Report

Sudden Death due to Spontaneous Intracerebellar Haemorrhage: A Case Report

Akshith Raj S. Shetty^{1*}, Y.P. Girish Chandra², Somusekhar Gajula³ and Anitha Shivaji⁴

¹Assistant Professor, Department of Forensic Medicine, MS Ramaiah Medical College, MSRIT Post, MSR Nagar, Bangalore, RGUHS, Karnataka, India

²Professor, Department of Forensic Medicine, MSRMC, RGUHS, Bangalore, Karnataka, India

³Post-Graduate Student, Department of Forensic Medicine, MSRMC, RGUHS, Bangalore, Karnataka, India

⁴Assistant Professor, Department of Forensic Medicine, Kasturba Medical College, Manipal University, Manipal, Karnataka, India

*Corresponding author email id: aksrash@gmail.com

Received: 13-7-2018; Accepted: 23-9-2018

ABSTRACT

Forensic pathologists come across natural deaths only when it is sudden. Sudden natural deaths are mostly due to the involvement of the cardiovascular system and followed by the involvement of central nervous system. Here, we report a case of young air force personnel without any prior medical history, who collapsed at the morning exercise session and was declared brought dead. At autopsy, the cause of death was attributed to a spontaneous intracerebellar haemorrhage. Spontaneous cerebellar haemorrhage is defined as bleeding into cerebellar parenchyma without any trauma and constitutes a very small percentage of all intracerebral haemorrhages. Cerebellar haemorrhage is most commonly caused by hypertension and other causes are aneurysms, vascular malformations, coagulopathies and tumour bleeding. Thus, this case report is being presented to stress on the need for an extensive medical examination for recruits in armed forces instead of the routine screening tests.

Keywords: Forensic pathology, Sudden natural death, Intracranial haemorrhage, Intracerebellar haemorrhage, Spontaneous cerebellar haemorrhage

INTRODUCTION

Spontaneous cerebellar haemorrhage is defined as bleeding into cerebellar parenchyma without accompanying trauma and constitutes only 5–10% of all intracerebral haemorrhages. It could result from an arterial or venous rupture in the dentate nucleus. Cerebellar haemorrhage is most commonly caused by hypertension. Further aetiologies include vascular malformations, aneurysms, inherited or acquired coagulopathy, and tumour bleeding ^[1,2]. Spontaneous cerebellar haematomas represent 5–13% of all cases of

spontaneous intracranial haemorrhage. These haematomas are associated with high mortality rates of 20–75%, irrespective of the mode of treatment, with higher values being reported for the pre-computed tomography era. Traditionally, cerebellar haemorrhage has been considered a subgroup of intracranial haemorrhage with a particularly grim prognosis; early mortality varies from 18 to 75% ^[3-6].

The majority of cerebellar bleedings occur spontaneously (non-traumatic) and are not secondary to a specific underlying cause. The term primary cerebellar

haemorrhage (PCH) is defined as a spontaneous (non-traumatic) haemorrhage in the cerebellar parenchyma, not secondarily caused by a tumour, vascular malformation or aneurysm. Haemorrhages occurring under oral anticoagulation are regarded as PCHs. The term PCH is used for intracerebellar haemorrhages only, not extracerebellar intracranial haemorrhages, such as epidural or subdural haematomas [7].

CASE PRESENTATION

A 24-year-old male, a recruit in the armed forces, had suddenly complained of severe headache following the regular morning exercises. He had one episode of vomiting following which he collapsed. He was taken to the hospital where he was declared dead. Externally, the body measured 176 cm and was moderately built and nourished. Post-mortem staining was present over the back of chest and abdomen and was fixed. Rigor mortis was appreciated all over the body. Internal examination revealed subarachnoid haemorrhage in the right parietooccipital region and in the base of the brain (Figure 1). On cut section, cerebellum revealed intracerebellar haemorrhage (Figure 2 and 3). Both lungs were oedematous and congested. Cut section exuded blood mixed with froth. All organs were intact and congested. Histopathological examination confirmed spontaneous intracerebellar haemorrhage with subarachnoid



Figure 1: Subarachnoid haemorrhage in the right parietooccipital region



Figure 2: Cut section of cerebellum



Figure 3: Cut section of cerebellum (close up)

extension. There was no evidence of any tumour, vascular malformation or aneurysmal rupture. On perusal of the autopsy findings and the histopathology report, cause of death was opined to be due to cardiorespiratory arrest as a result of spontaneous intracerebellar haemorrhage with subarachnoid extension.

DISCUSSION

Hypertensive cerebellar haemorrhage constitutes 5–10% of all hypertensive intracranial haemorrhage cases^[8]. Cerebral amyloid angiopathy was also reported as a significant cause of cerebellar haemorrhage in old age^[9]. Posterior fossa vascular malformations frequently present with sudden onset of cerebellar haemorrhage^[10,11]. Haemorrhage occurs in a high percentage of cerebellar infarctions, although at times this is a delayed occurrence^[12]. Rarer, although possible, causes of cerebellar haemorrhage include head trauma, haemophilia^[13] or bleeding inside a cerebellar tumour.

In our case, there was no cerebellar pathology at autopsy, the deceased had no prior bleeding disorders in his routine investigations done. Hence, the intracerebellar haemorrhage could be attributed to undiagnosed hypertension.

The location of the haematoma within the cerebellum, whether peripherally in the hemisphere or in the midline occupying the vermis, may affect the outcome and therapeutic decision making^[14,15]. The site of the haematoma is usually near or at the dentate nucleus and is less commonly in the vermis^[8,15,16]. Haematomas are usually located in the superior cerebellar artery territory. Autopsy studies demonstrated a low incidence of haemorrhage extending into the brainstem^[8,17]. The importance of the location is related to brainstem compression.

When no intrinsic cerebellar abnormality is found, the haemorrhage is thought to originate near the dentate nucleus and may expand to involve the brain stem or the ventricular system, which was noticed in our case. The haemorrhage was seen in the right hemisphere and had involved the brainstem and the parieto-occipital region with subarachnoid extension in our case.

Although the syndrome may present with typical signs and symptoms of early hydrocephalus, commonly the lesion is mislocalized to the supratentorial area, especially if coma intervenes early during the course. Computerized tomographic scanning has greatly simplified the diagnostic

workup because the hyperdense haemorrhagic lesion, as well as the frequently associated hydrocephalus, is rarely missed.

In 1813, Brown-Sequard described the syndrome of cerebellar haemorrhage. First removal of a cerebellar haematoma was by Balance in 1906^[18]. Thereafter, surgery for cerebellar haematoma was mainly for chronic cases. In 1965, Fisher reported three cases, one of which showed dramatic recovery after sub-occipital craniectomy with removal of acute cerebellar haematoma.^[19] Miller urged early diagnosis and operative therapy if progress was to be made in the care of these patients. We have moved on from these early reports with the advent of latest technology and procedures, we are at a better position to diagnose and manage such cases these days.

CONCLUSION

In the present case, the deceased presented with features of raised intracranial tension like headache, nausea and vomiting followed by loss of consciousness, early diagnosis and early treatment would help in preventing mortality in such cases.

REFERENCES

- [1] Andrews CM, Jauch EC, Hemphill JC, Smith WS, Weingart SD. Emergency neurological life support: intracerebral hemorrhage. *Neurocrit Care* 2012;17:37–46.
- [2] Dammann P, Asgari S, Bassiouni H, Gasser T, Panagiotopoulos V, Gizewski ER, *et al.* Spontaneous cerebellar hemorrhage: experience with 57 surgically treated patients and review of the literature. *Neurosurgical Review* 2011;34:77–86.
- [3] Kirolos RW, Tyagi AK, Ross SA, van Hille PT, Marks PV. Management of spontaneous cerebellar hematomas: a prospective treatment protocol. *Neurosurgery* 2001;49(6):1378–1386.
- [4] Luparello V, Canavero S. Treatment of hypertensive cerebellar hemorrhage—surgical or conservative management? *Neurosurgery* 1995;37(3):552–553.
- [5] Salvati M, Cervoni L, Raco A, Delfini R. Spontaneous cerebellar hemorrhage: clinical remarks on 50 cases. *Surgical Neurology* 2001;55 (3):156–161.

- [6] Van der Hoop RG, Vermeulen M, van Gijn J. Cerebellar hemorrhage: diagnosis and treatment. *Surgical Neurology* 1988;29(1):6–10.
- [7] Witsch J, Neugebauer H, Zweckberger K, Jüttler E. Primary cerebellar haemorrhage: Complications, treatment and outcome. *Clinical Neurology and Neurosurgery* 2013;115(7):863-869
- [8] Fisher CM, Picard EH, Polak A, Dalal P, Ojemann RG. Acute hypertensive cerebellar hemorrhage: Diagnosis and surgical treatment. *Journal of Nervous and Mental Disease* 1965;140:38–57.
- [9] Itoh Y, Yamada M, Hayakawa M, Otomo E, Miyatake T. Cerebral amyloid angiopathy: A significant cause of cerebellar as well as lobar cerebral hemorrhage in the elderly. *Journal of the Neurological Sciences* 1993;116:135–41.
- [10] Logue V, Monckton G. Posterior fossa angiomas: A clinical presentation of nine cases. *Brain* 1954;77:252-73.
- [11] Viale GL, Pau A, Viale ES. Surgical treatment of arteriovenous malformations of the posterior fossa. *Surgical Neurology* 1979;12:379-84.
- [12] Taneda M, Oxaki K, Nakayama A, *et al.* Cerebellar infarction with obstructive hydrocephalus. *Journal of Neurosurgery* 1982;57:83-91.
- [13] Eyster ME, Gill FM, Blatt PM, *et al.* Central nervous system bleeding in hemophiliacs. *Blood* 1978;61:1179-1188.
- [14] Koziarski A, Frankiewicz E. Medical and surgical treatment of intracerebellar haematomas. *Acta Neurochir (Wien)* 1991;110:24–8.
- [15] Dinsdale HB. Spontaneous hemorrhage in the posterior fossa: A study of primary and pontine hemorrhages with observations on their pathogenesis. *Archives of Neurology* 1964;10:200–17.
- [16] Lui TN, Fairholm DJ, Shu TF, Chang CN, Lee ST, Chen HR. Surgical treatment of spontaneous cerebellar hemorrhage. *Surgical Neurology* 1985;23:555–8.
- [17] Ott KH, Kase CS, Ojemann RG, Mohr JP. Cerebellar hemorrhage: Diagnosis and treatment—A review of 56 cases. *Archives of Neurology* 1974;31:160–67.
- [18] Brown-Sequard CE. Diagnosis of hemorrhage in the cerebellum. *Lancet* 1861;2:391-395.
- [19] Fisher CM, Picard EH, Polak A, *et al.* Acute hypertensive cerebellar hemorrhage; diagnosis and surgical management. *Journal of Nervous and Mental Disease* 1965;140:38-57.

How to cite this article: Akshith Raj S. Shetty, Y.P. Girish Chandra, Somusekhar Gajula and Anitha Shivaji. Sudden Death due to Spontaneous Intracerebellar Haemorrhage: A Case Report. *Indian Internet Journal of Forensic Medicine & Toxicology* 2018; 16(3): 75-78.