

Meningioma - a Cause of Sudden Death

Raghavendra B YP^{1*}, Rai Sh², M Bakkannavar Sh¹, Shetty H P¹

¹ Department of Forensic Medicine and Toxicology, Kasturba Medical College, Mangalore, Manipal University, India

² Department of Pathology, Kasturba Medical College, Mangalore, Manipal University, India

ARTICLE INFO

Article Type:
Case Report

Article History:
Received: 18 Sep 2015
Revised: -
Accepted: 26 Sep 2015

Keywords:
Sudden Death
Intracranial Tumor
Meningioma

ABSTRACT

Background: Sudden unexpected death of an apparently healthy individual is an expected event in the life of a forensic expert. Neurological causes account for only 15% of all sudden deaths of which deaths from an undiagnosed primary intracranial neoplasm is exceptionally rare. Meningioma is a common intracranial tumor and it is rarely associated with sudden, unexpected deaths.

Case Report: We report one such case of sudden death in a 32-year old male with an olfactory meningioma without any prior history of neurological symptoms raising queries regarding the cause of death.

Conclusion: This case illustrates the possibility of meningioma remaining silent till middle age and can present with sudden onset of seizures which may lead to fatality.

Copyright©2016 Forensic Medicine and Toxicology Department. All rights reserved.

► *Implication for health policy/practice/research/medical education:* Meningioma

► *Please cite this paper as:* Babu YPR, Rai Sh, M Bakkannavar Sh, Shetty H P. *Meningioma - a Cause of Sudden Death. International Journal of Medical Toxicology and Forensic Medicine.* 2016; 6(1): 47-9.

1. Introduction:

Natural deaths due to neurological causes account for 15% of all sudden deaths. Sudden and unexpected death from an undiagnosed primary intracranial neoplasm is exceptionally rare (1-4). Tumors of the brain present with obvious clinical symptoms due to various reasons like local tissue destruction, edema, distortion and shift of intracranial contents, raised intracranial pressure and the onset of epilepsy (5). Death from primary intracranial neoplasm is usually preceded by months to

years of symptoms and the diagnosis is easily established before the patient's death (1). Meningioma is a common intracranial tumor and it is rarely associated with sudden, unexpected deaths (2-4). We report a rare case of sudden death of an apparently healthy male due to a combination meningioma and head injury.

2. Case Report:

A 32-year old, apparently healthy male had an episode of epileptic seizures while at work and collapsed. He was shifted to a district hospital where he was declared as dead on arrival. Due to the sudden and unexpected nature of the death an autopsy was requested by investigating officer.

At autopsy, the deceased was found to be a moderately built and nourished adult male without any external injuries. The scalp and skull were unremarkable, however removal

Corresponding author: Babu YPR, MD. Associate Professor, Department of Forensic Medicine and Toxicology, Kasturba Medical College, Mangalore, Manipal University, India

E-mail: raghavendra.babu@manipal.edu,
bobs009@gmail.com

of the vault revealed extradural haemorrhage over the left temporal region and delivery of the brain from the cranial cavity revealed an irregular, pedunculated, soft to firm mass in the anterior cranial fossa corresponding to crista galli arising out from the olfactory groove (Fig. 1). The mass weighed 30g and measured 4×5 cm in dimensions. Cut section of the mass was brownish and friable in consistency. The brain on gross examination was congested and oedematous weighing 1340g with haemorrhage in the right frontal lobe. Histopathology of the suspected tumor mass revealed typical features of meningioma (meningothelial cells with vesicular chromatin and prominent nucleoli arranged in whorled groups and syncytium). Few elongated cells with abundant collagen were also seen with psammomatous calcification (Fig. 2 and 3). Section of the frontal lobes showed area of haemorrhage. Toxicological study of routine viscera was negative for toxins.

3. Discussion:

Sudden unexpected natural deaths are always an enigma for an autopsy surgeon as well as to the investigating officer. Majority of the cases may not pose a problem of diagnosis but sometimes the rarity of a condition associated with sudden death could find the autopsy surgeon in a difficult situation. One such rare cause of sudden death is meningioma. As per our literature search it is assessed that sudden, unexpected death from an undiagnosed primary intracranial neoplasm is exceptionally rare, with frequencies in the range of 0.04% to 0.24% (2-4). The common mechanism of sudden death from an intracranial tumor is associated with a rapid increase in intracranial pressure caused by hemorrhage from the tumor or acute obstructive hydrocephalus (6-8). Uncommonly, epileptic seizures induced by intracranial tumors are assumed to be a cause of sudden death (9, 10).

Meningiomas are extra-axial central nervous system tumors most often discovered in middle to late adult life, and are more often seen in women. Ninety percent of meningiomas are benign, 6% are atypical,



Fig. 1. View of tumor mass in the anterior cranial fossa.

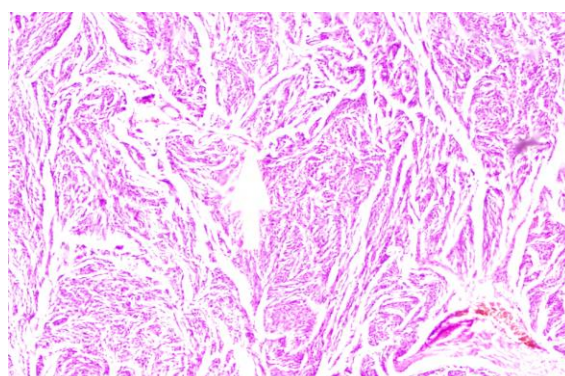


Fig. 2. Meningothelial cells arranged in whorled groups and syncytium.

and 2% are malignant (11, 12). Metastatic meningioma is quite rare and lung is the most frequent site for metastasis (13, 14).

The mechanism of sudden death is not well described in literature but few cases reports suggest the probable mechanisms of sudden death could be intratumoral haemorrhage, cerebral infarct, etc.^{15,16} Meningiomas are known to be silent killers especially the olfactory groove meningiomas which may attain large sizes prior to presentation (17, 18).

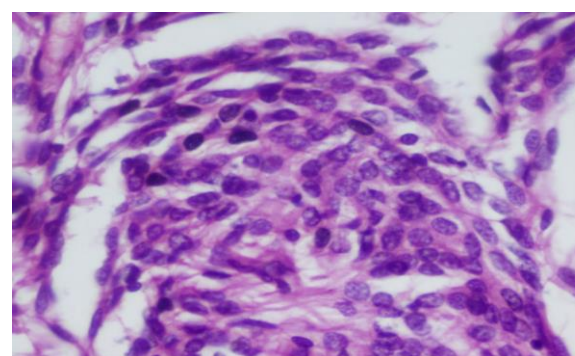


Fig. 3. Meningothelial cells with vesicular nuclei.

In the present case, a history of epileptic seizures prior to death and the location of the meningioma in the olfactory groove at autopsy, ascertains the aforementioned fact and the probable reason for remaining clinically silent before the fatal day. The probable mechanism of death could be due to traumatic bleeding as a result of fall subsequent to epileptic seizures consequent to meningioma.

4. Conclusion:

This case illustrates the possibility of meningioma remaining silent till middle age and can present with sudden onset of seizures which may lead to fatality.

5. References:

1. Huh GY, Hoon-Kim K, Yong-Woo A, Gam J, Seong M, Sang-Yong L. Sudden Death due to Undiagnosed Intracranial Meningioma: A Case Report. *The Korean Journal of Legal Medicine* 2008;32:150-2.
2. DiMaio SM, DiMaio VJM, Kirkpatrick JB. Sudden, unexpected deaths due to primary intracranial neoplasms. *Am J Forensic Med Pathol.* 1980;1:29-45.
3. Matschke J, Tsokos M. Sudden unexpected death due to undiagnosed glioblastoma: report of three cases and review of the literature. *Int J Legal Med.* 2005;119:280-4.
4. Vougiouklakis T, Mitselou A, Agnantis NJ. Sudden death due to primary intracranial neoplasms. A forensic autopsy study. *Anticancer Res.* 2006;26:2463-6.
5. Ironside JW, Moss TH, Louis DN, Lowe JS, Weller RO. *Diagnostic pathology of nervous system tumours.* London: Churchill Livingstone. 2004;8-10.
6. Poon TP, Solis OG. Sudden death due to massive intraventricular hemorrhage into an unsuspected ependymoma. *Surg Neurol.* 1985;24:63-6.
7. Opeskin K, Ruszkiewicz A, Anderson RM. Sudden death due to undiagnosed medullary-pontine astrocytoma. *Am J Forensic Med Pathol.* 1995;16:168-71.
8. Buttner A, Winkler PA, Eisenmenger W, et al. Colloid cysts of the third ventricle with fatal outcome: a case report of two cases and review of the literature. *Int J Legal Med.* 1997;110:260-6.
9. Abu Al Ragheb SY, Koussous KJ, Amr SS. Intracranial neoplasms associated with sudden death: a report of seven cases and a review of the literature. *Med Sci Law.* 1986;26:270-2.
10. Buttner A, Gall C, Mall G, et al. Unexpected death in persons with symptomatic epilepsy due to glial brain tumors: a report of two cases and review of the literature. *Forensic Sci Int.* 1999;100:127-36.
11. Jason R, Maciej M, Marc C. Chamberlain. Intracranial meningiomas: an overview of diagnosis and treatment. *Neurosurgical Focus.* 2007;23(4):E1.
12. Yekeler E, Dursun M, Yilmazbayhan D, Tunacı A. Multiple pulmonary metastases from intracranial meningioma: MR imaging findings. *Diagn Interv Radiol.* 2005;11:28-30.
13. Enam SA, Abdulrauf S, Mehta B, Malik GM, Mahmood A. Metastasis in meningioma. *Acta Neurochir (Wien).* 1996;138:1172-8.
14. Kooroor JM, Jayakumar PN, Srikanth SG, Indira B, Devi MG. Solitary pulmonary metastasis from intracranial meningiothelial meningioma. *Australas Radiol.* 2002;46:65-8.
15. Lee BW, Seo JS. Meningioma presenting as cerebral infarct. *Kor J Leg Med.* 2001;25:53-7.
16. Ohaegbulam SC. Sudden death from an asymptomatic sphenoid ridge meningioma. *J Neurol.* 1977;215:291-4.
17. Helle TL, Conley FK. Haemorrhage associated with meningioma: a case report and review of the literature. *J Neurol Neurosurg Psychiatry.* 1980;43:725-9.
18. Hentschel SJ, Demonte F. Olfactory groove meningiomas. *Neurosurg Focus.* 2003;14:e4.