Case Report

A case of murder turned out to be a natural death – A case report

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Abstract

This is a case of a cable T.V operator who went for collecting money from the customers as a routine at every month end. While collecting money there was an argument with a customer for not paying the money to him, meanwhile 2 of the customer's friends also arrived at the spot. There was an argument between the cable T.V operator and three of his customers regarding payment of money. The argument went into a scuffle with words, all of a sudden the Cable T.V operator fell down over the ground. He was taken to a nearest tertiary care hospital where he was declared as brought dead to the hospital. A case was registered under 302 IPC, by the police and the requisition for conducting post-mortem examination was forwarded to the Department of Forensic Medicine and Toxicology, Kilpauk Government Medical College and Hospital – Chennai.

Key Words: Cable T.V Operator, customer's, scuffle, aneurysm, cerebral aneurysm.

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INTRODUCTION

An aneurysm is an abnormal, weak spot in a blood vessel that causes an outward bulging or ballooning of the arterial wall. An aneurysm confined to the head cause a serious medical condition, like a hemorrhagic stroke, which leads to brain damage and death. Berry aneurysms are the most common kind of aneurysm in the brain. These aneurysms remain asymptomatic for a long time or may rupture and cause intra cranial hemorrhage and sudden death, there by arising suspicion in the eyes of his near and dear ones. Cerebral secular aneurysm is relatively more common and is most commonly located at the branching points of large arteries of the Circle of Willis. Many are asymptomatic and are discovered incidentally. Available evidence suggest that these aneurysm develop as a result of combination of congenital or inherited defects weakening the arterial wall and acquired degenerative vascular disease. It appears that most cases of untreated cerebral aneursym will become larger and all the aneurysm will have the potential to rupture. The only consistent significant predictor of aneurysmal rupture in most studies is the size of an aneurysm. Aneurysm with a size of less than 5 mm will have a very low rupture rate while those greater than 10mm will have a significant risk of subsequent rupture. There is no consensus on the influence of other reported risk factors such as hypertension, cigarette smoking and aneurysm location, on aneurysmal rupture. Those who suffered a ruptured aneursym are at a high risk for a recurrent haemorrhage shortly after the initial one. In cases of trivial trauma to head leading on to brain hemorrhage causing the death of the individual the defense counsel takes the advantage of the aneurysm to be the cause of brain hemorrhage. This is a case, report where deceased was found dead while arguing with his customer's regarding the fixation of money issues where he collapsed all of a sudden following rupture of berry aneurysm and we have reviewed the literature regarding the berry aneurysm and tried to corroborate with the legal scenario.

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CASE HISTORY

On 07-05-2015 at 19.15 P.M. A Cable T.V Operator went to collect money (monthly rent) from his customer. There While collecting money there was an argument with a customer for not paying the money to him, meanwhile 2 of the customer's friends who are also due to pay the monthly rent towards Cable T.V also arrived at the spot. There was an argument between the cable T.V operator and three of his customers regarding payment of money. The argument went into a scuffle with words, all of a sudden the Cable T.V operator fell down over the ground. He was taken to a nearest tertiary care hospital where he was declared as brought dead to the hospital. A case was registered under 302 IPC, by the police and the requisition for conducting post-mortem examination was forwarded to the Department of Forensic Medicine and Toxicology, Kilpauk Government Medical College and Hospital – Chennai.

Course in Hospital

He was declared as brought dead to the hospital. An ECG was taken (Flat ECG). The hospital authorities informed to the police of appropriate jurisdiction.

Post Mortem Findings

Requisition for post-mortem examination was received from the police on 08-05-2015 at 12.45 P.M in the Department of Forensic Medicine and Toxicology, Kilpauk Government Medical College and Hospital – Chennai. Post mortem Commenced on 08-05-2015 at 1.00 P.M in Kilpauk Government Medical College and Hospital, Mortuary. Its condition then was well built male dead body lying on its back. Rigor mortis present all over the body, Postmortem hypostasis present at the back over dependent areas except over the pressure points. There were no external injuries anywhere over the body

On dissection of Head

Scalp: INTACT. No contusions in the scalp.

Cranial Vault: INTACT.

Meninges: INTACT.

Diffuse Subdural Haemorrhage involving the right and left cerebral hemispheres of the brain. Diffuse Subarachnoid Haemorrhage involving all the lobes of the brain.

Brain: The brain is removed and weights 1410 grams. Dissection of the Circle of Willis demonstrates a ruptured berry aneurysm sac of 1.5 cm diameter at the bifurcation of left posterior cerebral artery. There is a firm blood clot adherent to it and a much larger fresh blood clot lying over the occipital area of the brain. Multiple sections through the brain showed no evidence of focal contusions. The white matter of the brain is normal. Basal ganglia show no changes. There is marked oedema and flattening of the left cerebral convolutions. There are numerous haemorrhages in the rostral pons and thalamic region. These haemorrhages lie mostly in the tegmental area of the pons but some are in the basilar substance in the midline. Cerebellum is congested. Medulla of the brain shows no change.

Base of Skull: INTACT.

On dissection of thorax

Heart: Normal in size, chambers contain clotted blood. Coronaries: patent. Valves: NAD; Great Vessels: NAD.

Lungs: Normal in size, c/s: pale. Larynx and trachea: Normal. Hyoid bone: Intact.

On Dissection of Abdomen

Stomach: Contains 200ml of grey colour fluid with no specific smell. Mucosa: Normal. Intestines: Distended with gas.

Liver and Kidneys: Normal in size, c/s: pale.

Spleen: Nil Particular.

Bladder: Contains 300ml of urine. **Genitalia:** Normal.

Pelvis / spinal column: INTACT.

Viscera were preserved and were sent to regional forensic science laboratory mylapore, chennai, for toxicological analysis

Viscera Report: All the samples sent for viscera were examined and alcohol or other poisons was not detected in any of them.

Final opinion to the cause of death: The deceased would appear to have died of intracranial haemorrhages due to rupture of berry aneurysm of circle of willis

DISCUSSION

Berry aneurysms, also known assaccular aneurysms, are sac-like out-pouchingin the cerebral blood vessels, which appear berry-shape on external examination, hence thename. Aneurysms usually reside in the Circle of Willis.[4] Rupture of aneurysm leads to sudden death due to intracranial hemorrhage.[5] There are four main types of intracranial aneurysms: saccular, fusiform, dissecting, and mycotic type. Saccular aneurysms occur when there is collagen deficiency in the internal elastic lamina and breakdown of the tunica media and accounts for 90% of intracranial aneurysms. An out pouching, consisting of only tunica intima and adventitia, protrudes through the defect in the internal elastic lamina and tunica media to produce the aneurismal sac.[6] All studies to date show peaks at various ages in the 40-70 year range, which is consistent with our case where the age of the deceased is 45yrs.[7] however a case of death due to a ruptured berry aneurysm has been reported in a 3.5 year old child.[8, 9] With regard to sex, studies showed that men have a lower average age at time of rupture than women, with the difference between men and women ranging from 2 to 4 years. It is slightly more common in females, with the male:female ratio being 2: 3.[10] Rupture of these aneurysms leads to hemorrhage in subarachnoid space

and sometimes in brain parenchyma. The most common pattern noted is subarachnoid hemorrhage alone, but hemorrhages in other areas are fairly common.[11] But occasionally, an aneurysm may also rupture into the subdural space, resulting in a subdural hematoma.[12] Most of the studies report that approximately 85% of cerebral aneurysms develop in the anterior part of the Circle of Willis at the junction of anterior cerebral and anterior communicating artery which is consistent with our case.[4] Few studies also suggest that the middle cerebral artery was cited as the location of most aneurysms.[13] The exception was the study by Inagawa and Hirano, who named the internal carotid artery as the most common location.[7] Aneurysms in the posterior half of the circle of Willis tend to have a significantly worse prognosis than those in the anterior half. Survival following rupture was poorer in anterior circle aneurysms compared to posterior circle aneurysm. In most of the studies home is the common location at the onset of symptoms, and presence of associated physical exertion.[16] Patients with berry aneurysms more frequently have histories of persistent headache, pregnancy-induced hypertension, long-term use of analgesics, and a family history of stroke.[17] The pathogenesis of berry aneurysm formation is multi-factorial.[18] The risk factors for developing berry aneurysms include any condition that causes hypertension, including atherosclerosis, renal disease or weakening of blood vessel walls such as connective tissue disorders, infections, family history, smoking and polycystic kidney disease.[19, 20] However, some controversy exists about the roles of underlying disease in the rupture of cerebral artery aneurysms, particularly hypertension and atherosclerosis.The prevalence of aneurysms is increased in certain genetic diseases; the classic example is autosomal dominant polycystic kidney disease (ADPKD), but other diseases such as Ehlers-Danlos syndrome, neurofibromatosis, and a1-antitrypsin deficiency also demonstrate a link.[4] But in our case the past medical history was not available and therefore cannot be correlated. Specific genes have also had reported association with the development of intracranial aneurysms, including perlecan, elastin, collagen type 1A2, endothelial nitric oxide synthase, endothelin receptor A and cyclin dependent kinase inhibitor. Recently, several genetic loci have been identified as relevant to the development of intracranial aneurysms. These include 1p34-36, 2p14-15, 7q11, 11q25, and 19q13.1-13.3.[21] Here a case was registered under 302 IPC by the police. There was a scuffle only with words but there was no history of any assault as per the inquest. There were no External injuries / Internal injuries anywhere over the body. More or less there were 3 persons arguing with this cable T.V Operator at the scene of crime. Argument with words were made in a public place at the road side and the sudden collapse of a well built, robust person who was a very good worker and an outspoken person, public witness of the scuffle created all these problems and henceforth made as a murder case by the police.

Forensic Significance

A thorough autopsy is an essential part in the diagnosis of berry aneurysm. In cases, where the death of the individual is due to intracranial hemorrhage, the question of natural or unnatural causes has to be ruled out. During autopsy the presence of intracranial hemorrhage accompanied by evidence of trauma like scalp contusion/fracture of skull bone rules out the natural causes. The common cause of berry aneurysm is hypertension, atherosclerosis etc., makes the vessel prone for rupture. In such a scenario,even the minor trauma to the head causes bleeding leading to death of the individual. If the head is protected by a turban or hair, one may not find scalp contusion or fracture. It becomes a challenge for the Forensic pathologist to rule out unnatural causes for intracranial hemorrhage. The defense counsel takes advantage of such cases and makes the expert evidence of medical witness biased, so that his/her client can be acquitted from the clutches of law. In court of law defense counsel often takes the plea of natural disease as cause of death or injury as contributory factor or injury aggravates disease process leading to death and may be convicted under S 299 IPC. The fact that the death of a human being is caused is not enough. Unless one of the mental states mentioned in ingredient (Sec 299 IPC) is present, an act causing death cannot amount to culpable homicide. In cases of death of the person as a result of intracranial hemorrhage due to an impact overhead, and if it is proved in the court that the intention and act of the accused at that material time is important to decide, whether it is merely an act of applying criminal force (Sec 350 IPC) / causing grievous hurt (320 IPC) / causing grievous hurt on provocation (335 IPC). So as a Forensic expert one should be careful in giving such opinion and before opine evaluate medical history, thorough autopsy findings.

CONCLUSION

Ruptured aneurysms must be considered as a possible cause of death in bodies brought for autopsy where internal findings show SAH/SDH with no external trauma. Autopsy and dissection of the cerebral vessels is vital to diagnosis, particularly when deaths are unexpected in nature. This is vital both for the family to understand the cause for their loved ones demise and also for any legal or insurance purposes that may follow.

REFERENCES

1. Subrahmanyam B.V textbook of forensic Medicine and Toxicology, 3rd edition, 2015, pages: 233-234.
2. Dr.K.S .Narayan Reddy, the essentials of Forensic Medicine and Toxicology 29th edition – 2010, pages: 233-236
3. Williams NS, Bulstrode CJK, O'Connell PR. Bailey andLove'sShortPractice of Surgery. Edward Arnold, UK. 25th ed. 2008:918.
4. Wardlaw JM, White PM. The detection and management of unrupturedintracranial aneurysms. Oxford journal.2000; 123(2): 205-221.
5. Larson PS, Reisner A, Morassutti DJ, Abdulhadi B, HarpringJE. Traumatic intracranial aneurysms. Journal of NeurosurgicalFocus.2000; 8(1): 1-9.
6. Gasparotti R, Liserre R. Intracranial aneurysms. Journal ofEuropean Radiology. 2005; 15: 441–447.
7. Shkrum MJ, Ramsay DA. Forensic Pathology of Trauma. HumanePress, New Jersey.1st edition; 2007:607-622.
8. Austin G, Fisher S, Dickson D, Anderson D, Richardson S. Thesignificance of the extracellular matrix in intracranial aneurysms. Annals of Clinical Lab Sci. 1993; 23(2): 97–105.
9. Inagawa T, Hirano A. Ruptured intracranial aneurysms: An autopsystudy of 133 patients. Surgical Neurology.1990; 33(2):117–123.
10. Stehbens W.E. Intracranial berry aneurysms in infancy. Journal of Surgical Neurology.1982; 18(1):58–60. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/7051385 assessed on 09/10/2013.
11. Prahlow JA, Rushing EJ, Barnard JJ. Death due to ruptured berry aneurysm in a 3.5 year old child. American Journal of Forensic Medicine and Pathology.1998; 19(4):391- 394.
12. Brisman, JL, Song JK, Newell DW. Cerebral aneurysms. The New England Journal of Medicine. 2006; 355 (9): 928–939
13. Freytag E. Fatal rupture of intracranial aneurysms: Survey of 250 medico legal cases. Archives Pathology.1966; 81(5): 418–24. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/5933816 assessed on 09/10/2013.
14. 12. Blake, Garfield O, James, Michael V, Ramjit, Chunilal,CharGurendra, Hunter R, Crandon, Ivor W. Acute Subdural Hematoma Without Subarachnoid Hemorrhage Caused by Rupture of an Intracranial Aneurysm. West Indian Medical Journal.2003; 52:80-81.
15. Bowen DA. Ruptured berry aneurysms: A clinical, pathological and forensic review. Forensic Sci International.1984; 26:227–34.
16. Wouter I. Schievink, Eelco FM, Wijdicks, David G, Piepgras, Chu-Pin Chu, Michael O'Fallon, Jack P, Whisnant. The poor prognosis of ruptured intracranial aneurysms of the posterior circulation. Journal of Neurosurgery. 1995; 82(5):791-795.
17. McCormick WF, Acosta-Rua GJ. The size of intracranial saccular aneurysms. An autopsy study. J Neurosurgery. 1970; 33(4):422– 427. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/5471931. assessed on 09/10/2013
18. Crompton MR. The coroner's cerebral aneurysm. Journal of Forensic Science Society. 1975;15(1):57–65. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/1159388. Assessed on 09/10/2013.
19. De la Monte SM, Moore GW, Monk MA, Hutchins GM. Risk factors for the development and rupture of intracranial berry aneurysms. Am J Med. 1985; 78(6): 957-964.
20. Wiebers DO, Piepgras DG, Meyer FB, Kallmes DF, Meissner I, Atkinson JL, Link MJ, Brown RD. Pathogenesis, natural history and treatment of un-ruptured intracranial aneurysms. Mayo Clinic Proceedings.2004; 79(12): 1572-1583.
21. Teunissen LL, Rinkel GJ, Algra A, van Gijn J. Risk factors for subarachnoid hemorrhage.A systematic review. Stroke a journal of cerebral circulation.1996; 27(3):544-549.
22. Bonita R. Cigarette smoking, hypertension and the risk of subarachnoid hemorrhage. A population-based case-control study.
23. Stroke a journal of cerebral circulation.1986; 17(5):831-835.
24. Vandervoet M, Olson J, Kuivaniemi H, Dudek D, SkuncaM,Ronkainen, Jaaskelainen, Hernesniemi. Intracranial Aneurysms in Finnish Families: Confirmation of Linkage and Refinement of the Interval to Chromosome 19q13.3. The American Journal of Human Genetics.2004. 74 (3): 564–571.
25. Ranchhoddas R, Thakore D K. Ratanlal and Dhrajlal's The Indian Penal Code. Wadhwa and company, Nagpur. 13th ed. 2004.

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