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Fatal Headache – A Case Report

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Abstract

Sudden death as a term is used to describe deaths occurring in an apparently healthy individual within 24 hours with or without symptoms. A medicolegal investigation is crucial to identify such deaths and exclude unnatural causes.

We report an autopsy case of a 22-year-old female who was previously healthy and had complained of headache a few days back which was diagnosed as migraine and accordingly treated. But after 4 days she complained of severe headache and died unexpectedly. An autopsy was performed, which showed that the extensive bleeding into the substance of the anterior and middle portion of the Left intracerebral region. A post mortem examination, (CT) computed tomography studies of the brain, Histological studies, and anatomical dissection were performed to locate the cause of sudden death. They revealed changes due to malignant hypertension which was undiagnosed.

Key words: Headache, sudden death, malignant hypertension, CT scan.

INTRODUCTION

Sudden unexplained deaths as a result of intracranial bleeding secondary to malignant hypertension in adults are an important component of medicolegal practice and are best examined as a combined effort by a forensic pathologist, or a histopathologist experienced in coroner's necropsies, and a neuropathologist.

CASE REPORT

Here we present a case of a 38 Year old female patient who was complaining of severe Headache for the past 15 days. Neurology check up was done in a tertiary care hospital of manipal and all investigations were performed including a CT scan of the brain which was normal. Blood pressure was 140/80 mm hg. Following which the doctors gave diagnosis as that of migraine and started her on conservative treatment. But after 4 days she complained of severe headache and was declared brought dead to the hospital which necessitated a postmortem examination.

Post-mortem studies showed features of cerebral oedema, subarachnoid and massive intracerebral haemorrhage in the anterior and middle left intra cerebral region in the absence of aneurysm, arteriovenous malformation or trauma. (Fig 1, 2). A CT scan of the brain was removed to localize and see the extend of the bleed. The brain was then preserved in formalin for further dissection to localize the site of bleed. Preservation leads to the delivery of the entire ante mortem clot (Fig. 5) from the brain substance basically due to contraction of brain substance due to formalin fixation leaving the empty brain cavity. (Fig 5, 6)

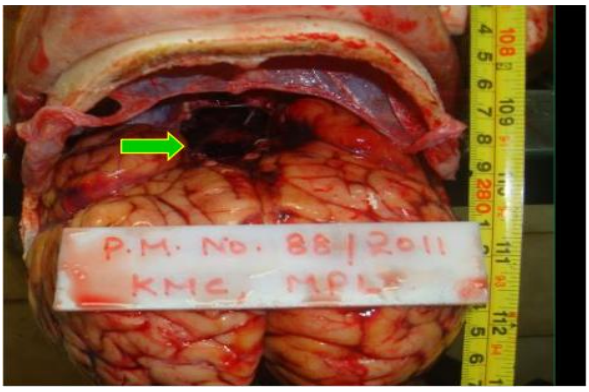

Figure no 1

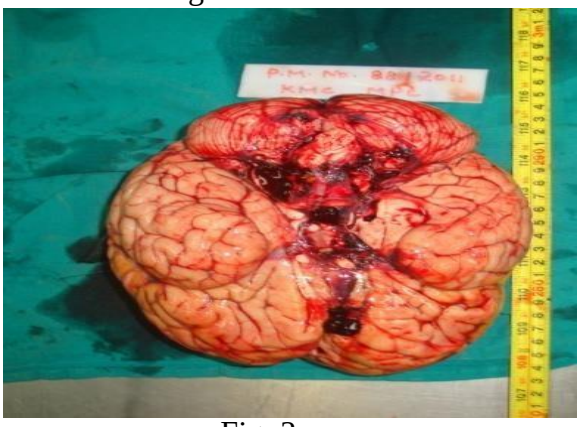

Fig -2

Head scan demonstrated massive subarachnoid hemorrhage and hematoma in the basal ganglion region of the left cerebral hemisphere indicating involvement of branches of the anterior cerebral and the middle cerebral arteries. (Fig 3, 4). Anatomical dissection of the entire branches of the left anterior, middle and posterior cerebral arteries didn't reveal any malformations or tumour but the bleed was in the region of the lenticulostriate branches of the middle cerebral arteries. (Fig 7, 8).

Histopathological examination of the kidney,

spleen, lung , liver revealed revealed fibrinoid necrosis a feature of malignant hypertension. These post-mortem features, CT scan examination, anatomical dissection and histological evidence suggests that such haemorrhage results from the development of fibrinoid necrosis in the small intracerebral (Fig 12) vessels due to malignant hypertension causing sudden unexpected death.

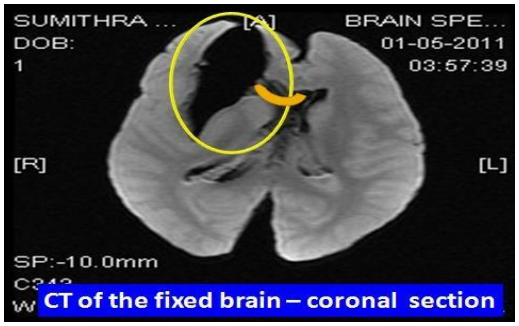

Fig-3 CT of Fixed Brain – Coronal Section

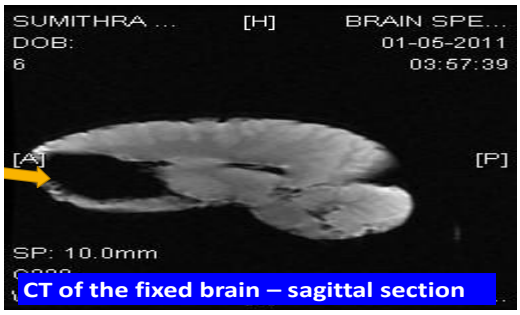

Fig.4-CT of Fixed Brain – Sagital section

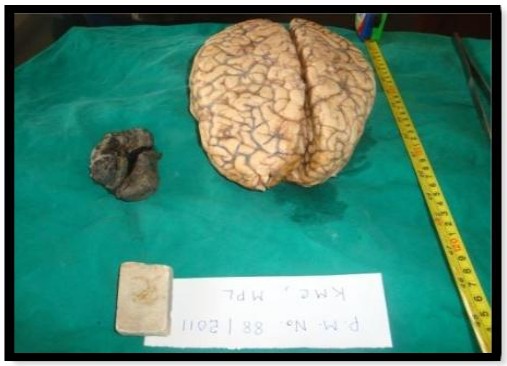

Fig.- 5

Fig.- 6

Fig.- 7-Middle Cerebral artery dissection

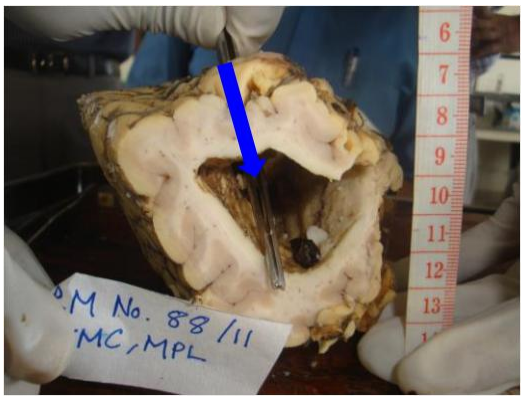

Fig-8

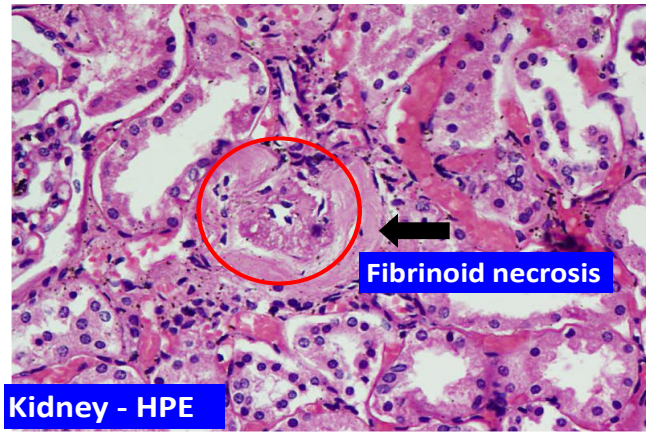

Fig-9

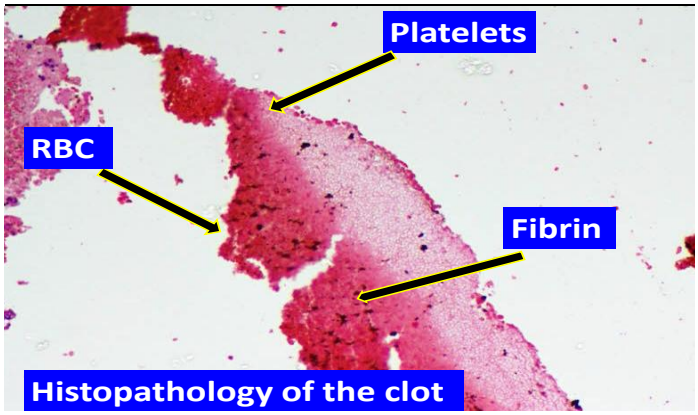

Fig- 11

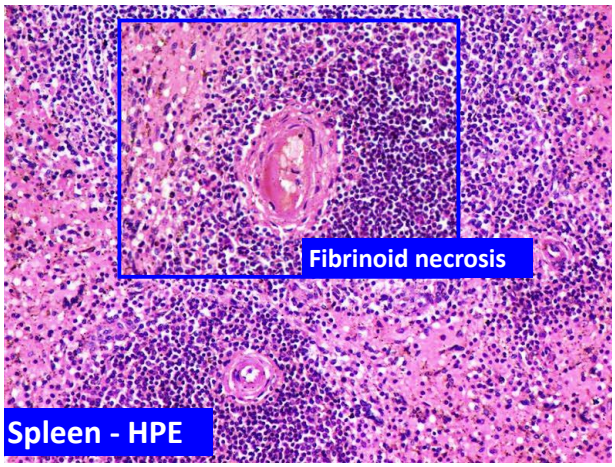

Fig-10

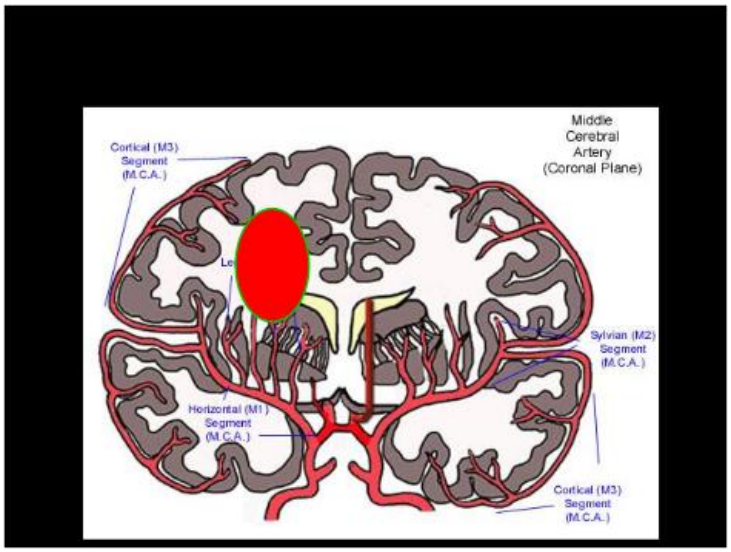

Fig-12

DISCUSSION

In this case it could have been been possible that she was suffering from mild to moderate hypertension which remained undiagnosed during her life time.

This hypertension caused chronic changes in the organs including the vessels in the brain leading on to haemorrhagic stroke which was confused as being a migraine attack and treated on those lines.

The problem here was that she was continuously bleeding from the minute branches of the cerebral circulation which eventually caused her sudden death.

Differential diagnosis for intracrebral bleed leading to sudden death include.[1-4]

-Berry Aneurysm Rupture

-Trauma

-Tumour- bleed

-Hypertensive bleed

Cerebrovascular accident secondary to malignant hypertension is a one of the most common causes of intracrebral bleed and sudden death. Malignant hypertension is an Syndrome associated with an abrupt increase of blood pressure with underlying hypertension Absolute level of blood pressure not as important as its rate of rise . All organs affected but kidneys, eyes and the brain most prone due to its rich blood supply. Causes, Risk factors include Collagen vascular disease, High blood pressure, Young adults.[5-10]

Pathogenesis of Malignant Hypertension.[1]

Fibrinoid necrosis, cellular intimal thickening

⇩

Endarteritis proliferans

⇩

Necrotizing arteriolitis

⇩

Cell rupture

⇩

Haemorrhage

Whether hypertension follows the benign or the malignant course depends chiefly on the severity of the hypertension. Malignant hypertension may develop in hypertension due to any cause, provided it is sufficiently severe.

The evidence for this hypothesis is as follows:[2]

1. The characteristic finding in malignant hypertension during life is albuminuric retinitis (hypertensive neuroretinopathy) which differs from the retinitis of benign hypertension (arteriosclerotic retinitis) in the presence of neuroretinal edema. This neuroretinal edema is due to raised intracranial pressure, which in turn seems to be a consequence of the high level of

diastolic arterial pressure.[2]

2. The characteristic finding in malignant hypertension after death is acute arteriolar necrosis, the occurrence of which in the kidneys is chiefly responsible for the rapid renal failure which is so often the cause of death. Evidence from animal experiments suggest that the chief factor determining these arteriolar necroses is the high level of arterial pressure.

CONCLUSION

- This case suggests that underlying malignant hypertension is a cause of sudden death and should be considered as a differential diagnosis with careful physical examination when patients present with headache.
- Educating patients on the side effects of chronic hypertension, early diagnosis, preventive measures, and treatment should be stressed.
- Also a multidisciplinary approach with detailed workup by the forensic pathologist such as Postmortem fixation & CT scan- brain as done in such medico legal case can give us conclusions regarding the exact cause of death in sudden unexpected, unexplained death cases.

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