

# A Case Report on Sub-Arachnoid Hemorrhage

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## ABSTRACT

Bleeding is a warning indication for many patients and persistent or recurrent hemorrhage leads to visit critical care facility. Brain computed tomography should be used to check for a ruptured aneurysm or an underlying SAH. The following are some of the methods for determining the underlying cause of SAH: Computed tomography angiography, magnetic resonance angiography and digital subtraction angiography are the 3 types of angiographies. A 36-years-old male was referred to the critical care department of our tertiary care teaching hospital with a complaint of severe frontal headache and vomiting from past 2 days. He had history of HTN and was not on any medication. Brain CT-SCAN was performed. Radiological finding of CT-SCAN shows Acute Sub-arachnoid Hemorrhage (SAH) in the in the split between the hemispheres, basal cistern, prepontine cistern,

ambient cistern and small extension into bilateral sylvian cisternal spaces and along the tentorium in posterior aspect. The patient deceased after 27 days of admission.

**Key words:** Subarachnoid hemorrhage, Hypertension, Aneurysm, Cerebrovascular Disorder, Thunderclap Headache, Cerebrospinal Fluid.

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## INTRODUCTION

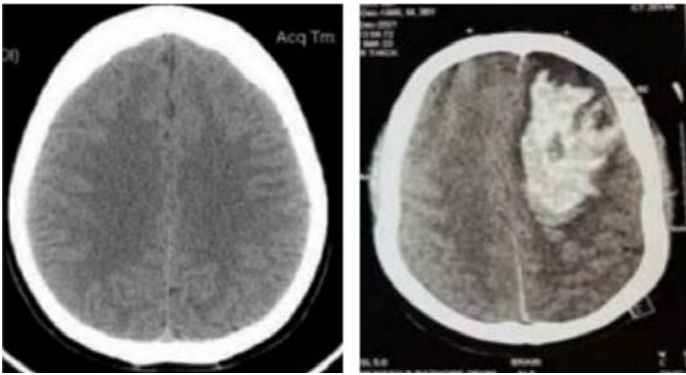
Subarachnoid Hemorrhage (SAH) is a condition of bleeding in the space between the brain and the tissues covering the brain. A medical emergency is frequently caused by burst blood artery in the brain (aneurysm). If this condition not treated properly it may result into permanent damage to the brain or death. Arachnoid mater- the middle layer of the meninges inferior to the dura mater and superior to the pia mater. The term arachnoid is a reference to the spider web-like appearance of the arachnoid mater fibres where they attach to the underlying pia mater. The arachnoid mater is fragile, impermeable, avascular membrane that is supported by the Dura mater's inner meningeal layer. It covers the spinal and encephalon in a similar arrangement and contributes to the circulation of cerebro-spinal fluid (CSF) in every part of the central nervous system (CNS). Sub-arachnoid space- it is located between the arachnoid mater and the underlying pia mater. It contains the arachnoid trabeculae. The arachnoid trabeculae are thin fibrous filaments that hold the two surfaces in place. The sub-arachnoid space is bounded by impermeable arachnoid and pia mater, it is become full with CSF also provide pathway for the CSF circulation and absorption around the encephalon and vertebral column. The space extends down to the termination of the vertebral arachnoid mater up to the S2 vertebrae. Cranial nerves, roots of the backbone nerves, arteries and the veins from both encephalon and the spinal column pass through the sub-arachnoid space. Sub-arachnoid cisterns are the spaces within the sub-arachnoid space where CSF pools and many vessels and nerves exit towards skull foramina. The CSF has been pooled as the result of the cranial pia mater tightly adhered to every fissure. An exception to cistern formation within the cranial sub arachnoid spaces is the Lumbar cistern. This is where CSF drawn from during lumbar procedure. Arachnoid villi allow CSF to be reabsorbed by the brain's venous vital fluid enclosed by the cranial sinuses. The sub arachnoid space loaded with CSF and contains cerebral vasculature. Damage to one of these vessels can there fulfil the sub arachnoid space with blood and this condition is designated as Sub arachnoid hemorrhage.<sup>1,2</sup> This blood present in sub arachnoid

space further irritates adjacent meningeal layer. This is responsible for the manifestation of symptoms. Effusion of blood can be traumatic or spontaneous. The majority of SAH instances are traumatic however non traumatic or spontaneous SAH can result from a ruptured intracranial berry aneurysm. A rapid development of severe headache is the first sign of these people nevertheless dizziness, vertigo, neck pain, nausea and vomiting are frequent clinical presentation.<sup>3-5</sup>

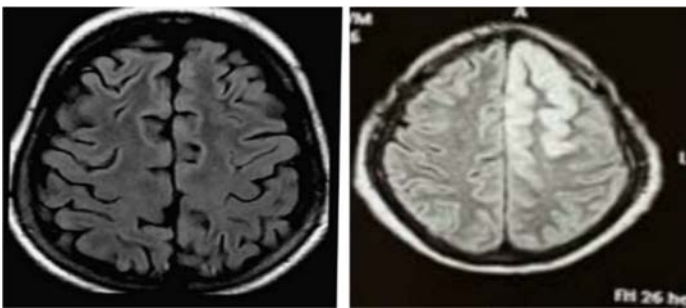
## CASE REPORT

A thirty-six year old male patient visited in multispeciality hospital (date of admission- 11/11/21) with the chief complaint of headache (frontal and continuous) and vomiting. He had a track record of hypertension (HTN) since 4 months and was not on any medication for the HTN. There had been no previous head injuries in the patient's life. On examination his vital signs were: blood pressure (BP)- 150/98 mmhg, Pulse Rate (PR)- 69/min, Oxygen saturation in air room - 100%, Resting Blood Sugar (RBS)- 102mg/dL. Laboratory test were performed. His haemoglobin was 10.8 and creatinine 3.4, PT- 10 sec, PTT- 26 sec, INR- 1 and PTT ratio- 35 sec. Bleeding time (BT) was 4 min 45 sec. The decision was made to take a cranial computed tomography (CT-SCAN). Radiological finding of CT-SCAN shows Acute Sub-arachnoid Hemorrhage (SAH) is seen in the medial longitudinal fissure, basal cistern, prepontine cistern, ambient cistern and small extension into bilateral sylvian cisternal spaces and along the tentorium in posterior aspect (Figure 1). Other test include Magnetic Resonance Imaging (MRI) brain angiography was performed and the radioscopy finding revealed normal flow related enhancement noted in distal segments of left carotid artery suggestive of recanalization. Centrum T2 and FLAIR hyperintense signals noted involving pons (Figure 2). There are several hyperintense areas in periventricular deep white mater region possibility of periventricular chronic small vessel ischemic changes. ACOM clip noted in C2. The patient deceased after 27 days of admission.

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**Figure 1:** Normal CT-Scan vs Abnormal patient's CT-Scan.



**Figure 2:** Normal vs Abnormal patient's MRI Scan.

## DISCUSSION

We delineate a case of SAH in a middle age man. History of HTN in this patient appear to be very important as he is not on any medication. It is extensively considered that SAH can alter the ECG response and cause QT prolongation. It can also alter the status of other organs in the body. Some of these conditions include stroke, ischemic stroke and aneurysm. With the mortality rate ranges from 40-50%, it is the most likely of all cerebrovascular disorder to result in death. The primary symptom of SAH is sudden and severe headache. The headache is sometime associated with gagging, emesis and sudden collapse. Often called THUNDERCLAP HEADACHE. Many patients often describe it as “worst headache” ever. The severity in the beginning of SAH has a significant impact on convalescence and diagnosis. In general, one-third of patients who suffer from SAH will sustain oneself with good recovery, one-third will remain alive with disability or stroke, one-third will die.<sup>6</sup> Using the MRI data, the radiologist was able to predict with >90% accuracy which patients had experienced SAH symptoms. Conventional MRI sequences most often manifest no signs of stroke in the acute phase, conventional MRI may show signs of intravascular thrombus, such as lack of flow void on T2-WI, vascular hyperintensity on FLAIR, and hypointense vascular sign on gradient- recalled echo (GRE) sequence. In our case the sufferer was incubated and sedated. Patient was on INJ Meropenam (1gm), INJ Tigecycline (50mg), INJ Epilive (500 mg), INJ Rantac (40mg), INJ PCM (1g).

We also came across another case report of 68-year-old female, having a medical background of DM Type 2 and stage 3 hypertension who presents

to the intensive care unit.<sup>7,8</sup> This instance had a clinical appearance that was almost identical to our case and mainstay therapeutic approach was maintaining glucose levels between 110-120 mg/dl by using continuous insulin After a catastrophic brain injury or aneurysmal subarachnoid haemorrhage, infusions may provide some therapeutic benefit with a marginally better result.<sup>9,10</sup>

## CONCLUSION

In this case report, we focus on a 36-year-old male patient who has a Sub Arachnoid Hemorrhage (SAH) which is not a infrequent condition but Subarachnoid hemorrhage may be caused by trauma or occur spontaneously. Even if diagnosed and treated early, it is a life-threatening situation that can result in death or serious disability. Observation for indicators of intracranial mass effect, medication, and early neurosurgical intervention are all a component of the therapy. Ten to Fifteen percent of folks with subarachnoid hemorrhage die earlier than arriving on the sanatorium, and only half of live on to clinic discharge. Physicians must recognise subarachnoid haemorrhage as soon as feasible, since early diagnosis of persistent headache reduces the risk of mortality and quality of life.

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## CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

## ABBREVIATIONS

**SAH:** Sub arachnoid hemorrhage; **HTN:** Hypertension; **CSF:** Cerebrospinal fluid; **CNS:** Central Nervous System; **DM:** Diabetes Mellitus; **MRI:** Magnetic Resonance Imagine; **GRE:** gradient- recalled echo.

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