

Hypertensive Emergency with Multiple Spontaneous Intracerebral Hemorrhages

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A forty-seven-year-old male was brought to the hospital in an unconscious state. He had a history of untreated hypertension. He developed sudden severe headache followed by generalized tonic-clonic seizure with the up rolling of the eyes for five minutes followed by loss of consciousness. The Glasgow coma scale (GCS) was E1M2V1; the pupils were 2 mm, non-reactive to light and bilateral papilledema. He was in a decerebrated posture, with generalized hypotonia, hyperreflexia, and extensor plantar responses.

Electrocardiogram (ECG) revealed a significant left ventricular hypertrophy based on multiple voltage criteria. CT brain revealed large hyperdense areas at the left thalamus and the brainstem (pons and midbrain) extending into the fourth ventricle and prepontine cistern. The patient was intubated and managed conservatively. He expired within twenty-four hours of his admission. He died due to cardiopulmonary arrest.

The simultaneous development of two or more spontaneous hypertensive cerebral hemorrhage attack is rare, and there are very few cases reported in the literature. We report such unusual case of hypertensive emergency with spontaneous hemorrhage involving the thalamic, midbrain and pons.

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Intracerebral hemorrhage is a common medical emergency accounting for 10% to 15% of all stroke subtypes¹. Longstanding and uncontrolled hypertension is a well-known risk factor of single spontaneous intracerebral hemorrhage. However, the simultaneous occurrence of multiple sites is rare and constitutes less than 5%². Although primary Multiple Simultaneous Intracerebral Hemorrhages MSICHs are uncommon, sporadic cases have continuously been reported in the literature. However, majority of the cases are reported from Asian countries. The supratentorial region is the most common site of bleeding, and primary MSICHs in the infratentorial region tend to occur in the cerebellum³.

The aim of this presentation is to report a case of hypertensive male with primary multiple simultaneous intracerebral hemorrhages due to untreated hypertension.

THE CASE

A forty-seven-year-old right handed Filipino male was brought to the hospital in an unconscious state. He was untreated and had uncontrolled hypertension, diagnosed the previous year, but he was not taking his medication properly. He was neither a smoker nor an alcoholic, and works as a security guard. On the day of admission, he developed a sudden severe headache followed by generalized tonic-clonic seizure and up rolling of the eyes for five minutes followed by loss of consciousness. On examination, he was found afebrile with a high blood pressure of 220/110 mmHg; his pulse rate was 82 beats per minute with a regular rhythm. All peripheral pulses were palpable. The patient was comatose with a Glasgow coma scale (GCS) of E1M2V1, pupils of 2 mm, non-reactive to light and bilateral papilledema. Both corneal and gag reflexes were absent. He

was in a decerebrated posture, with generalized hypotonia, hyperreflexia and extensor plantar responses.

His laboratory investigation revealed leukocytosis of 16,000 (k/ul), normal hemoglobin and platelet. He had impaired renal function with blood urea nitrogen of 36 mg/dl, creatinine of 3.5 mg/dl. Serum electrolytes were within normal range. Other laboratory tests were unremarkable including toxicology screen, cardiac enzyme and coagulation profile.

Electrocardiogram (ECG) revealed a significant left ventricular hypertrophy based on multiple voltage criteria. CT brain revealed large hyperdense areas noted at the left thalamus and the brainstem (pons and midbrain) extending into the fourth ventricle and prepontine cistern, see figures 1 and 2. Computerized tomography angiogram (CTA) could not be done due to the renal function impairment.

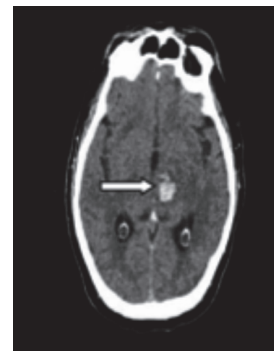


Figure 1 (A): Axial Plain CT Brain Image Showing Hyperdense Areas in the Left Thalamus

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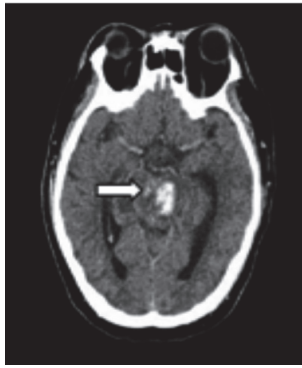


Figure 1 (B): Axial Plain CT Brain Image Showing the Midbrain Extending into the Fourth Ventricle and Prepontine Cistern

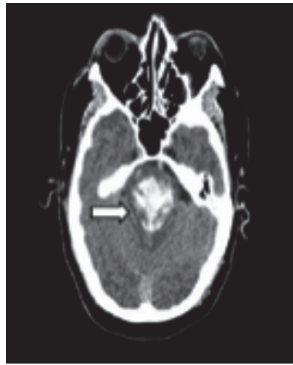


Figure 1 (C): Axial Plain CT Brain Image Showing the Pons

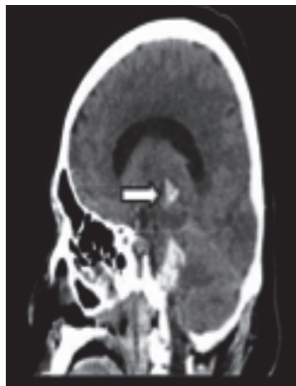


Figure 2 (A): Sagittal Plain CT Brain Image Showing Hyperdense Areas in the Left Thalamus

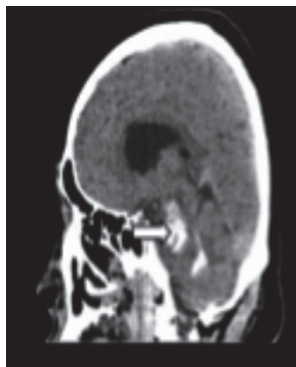


Figure 2 (B): Sagittal Plain CT Brain Image Showing the Midbrain

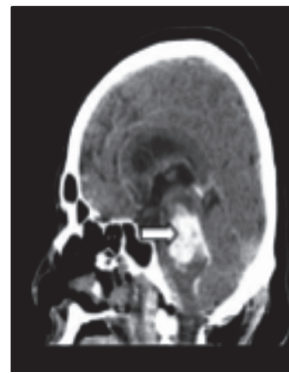


Figure 2 (C): Sagittal Plain CT Brain Image Showing the Pons

The patient was intubated and managed conservatively. Unfortunately, he expired within twenty-four hours of admission due to cardiopulmonary arrest.

DISCUSSION

Long standing hypertension is a major risk factor and contributes to 50% of all the causes of intracerebral hemorrhage (ICH)². Uncontrolled hypertension leads to pathological changes of the perforator vessels that directly bifurcate from large basal arteries. Atherosclerosis predominately affect small penetrating vessel to the deep cerebral areas leading to lacunar infarct or tear leading to a focal hemorrhage. Spontaneous single ICH occurs predominately in the deep cerebral areas namely putamen and thalamus, followed by the cerebellum, pons and subcortical white matter¹⁻⁴.

Non-traumatic multiple spontaneous intracerebral hemorrhage (MSICH) is considered uncommon, and has been observed only in 0.7% to 3% of hemorrhagic strokes⁵. There are certain etiologies attributed to this emergency including uncontrolled hypertension, vasculitis, sympathomimetic drugs, primary and metastatic brain tumors, cerebral amyloid angiopathy, sinus thrombosis, coagulopathy, multiple infarctions with hemorrhagic transformation, and unexplained causes⁵⁻⁶. Uncontrolled hypertension is the most common risk factor of primary non-traumatic MSICH. Neuroimaging and identification of risk factors usually yield the diagnosis⁷. MSICHs commonly involve cerebral hemispheres bilaterally more than unilaterally (53.33% versus 46.67% respectively). Bilateral basal ganglia are the most common site of MSICHs; the combination of the thalamus and cerebellum is the most common site of unilateral MSICHs. Other combinations of unilateral MSICHs included the lobar region and cerebellum, the basal ganglia and midbrain, and the thalamus and pons³⁻⁸.

To my knowledge, simultaneous involvement of the thalamus, midbrain and pons have not been reported. The exact pathogenesis is not well-understood because of its rarity. However, some suggested that prolong effect of uncontrolled hypertension on multiple blood vessels might be the underlying pathology⁸. The outcome of multiple ICH is unknown, and there are no prognostic factors have been identified. However, reported cases of multiple ICH have lower GCS and have a high rate of quadriplegia compared to patients with single

ICH⁷⁻⁹. The prognosis of infratentorial and intraventricular hemorrhage is generally poor⁹⁻¹⁰.

CONCLUSION

Primary MSICH is rare and only a few cases were reported in the literature. Cerebellum hemorrhage is the most common infratentorial site.

A rare case of hypertensive emergency with multiple ICH occurring simultaneously in the thalamus, midbrain, pons and intraventricular was reported. His ECG finding of left ventricular hypertrophy suggests uncontrolled, longstanding hypertension.

This case merits attention because of its rarity as a complication of untreated and uncontrolled hypertension. More studies are required to determine the exact relationship between hypertension and multiple simultaneous ICH.

Potential Conflicts of Interest: None.

Competing Interest: None.

Sponsorship: None.

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