

Is management of spontaneous intracranial extradural hematoma in chronic renal failure is different with traumatic extradural hematoma -Case report and review of literature

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Abstract: Intracranial extradural hematoma is commonly associated with head trauma. Spontaneous EDH is a rare entity and associated with various co morbid conditions. Chronic renal failure (CRF) is one of them. In case of CRF, spontaneous EDH has been reported in those patients who were either on hemodialysis or had long history of CRF. We report a case of concurrently asymptomatic chronic renal failure that developed spontaneous EDH with neurological deficits and during investigation, diagnosed to have acute on chronic renal failure. Investigation and management is discussed in the report.

Keywords: Spontaneous, Extradural hematoma, chronic renal disease.

INTRODUCTION

Nontraumatic extradural hematomas (EDHs) are not very common. They are reported with different medical diseases. In such cases having comorbid conditions, it is challenge to manage such case. We report a case of spontaneous EDH and management aspect.

CASE REPORT

A 38-year-old-male presented in neurosurgery emergency ward with complaints of moderate to severe holocranial headache, weakness of right side of limbs, facial asymmetry and difficulty in speaking. He also suffered one episode of partial seizure involving right limbs and right side of face just before reaching the emergency. There was no history of trauma, any drug intake or any other co-morbid disease seemingly responsible for such event was elaborated from history. General examination revealed mild facial puffiness; blood pressure was 140/90 mm of Hg and pulse rate was 76/minute. There was no evidence of trauma, infections or bleeding diathesis. On examination patient was conscious, alert, comprehension was intact but had expressive dysphasia. He also had right sided supranuclear facial palsy with right hemiparesis having paresis in upper limb 0/5 and

in right lower limb power 3/5 in both proximal and distal muscle groups). Noncontrast CT scan revealed large extradural hematoma in left frontoparietal region of size 4x4x5 cm with midline shift of about 0.4 cm. Total volume of hematoma was about 40 cc. Biochemistry reports showed deranged renal parameters with serum creatinine 15.6 mg %, Blood urea nitrogen 126 mg %. Hematological investigation revealed anemia (Hb-8.6 gm %), thrombocytopenia (platelets counts 56000 / mm³), normal bleeding profile [prothrombin time 11.6 seconds (control 13.4 seconds) and partial prothrombin time 28.6 seconds (control 32.6 seconds)]. In view of severely deranged renal functions, non-progressive neurological deficit and stable condition, we managed patient conservatively on dehydrants with close monitoring of sensorium and vitals. Renal failure was managed by serial hemodialysis. Further investigation revealed bilateral contracted kidney on ultrasound suggestive of acute on chronic renal failure. He had normal C3, C4 concentrations which excluded the possibility of immune complex mediated glomerulonephritis. Other immunological investigation revealed positive antinuclear antibody, negative ANCA, absent anti ds-DNA excluding SLE. NCCT head was repeated on day 5 which showed resolving hematoma, Patient had significant improvement on conservative treatment and recovered of his weakness with residual weakness more in upper limb than in lower limbs as well as dysphasia at the time of discharge on 12th day.

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DISCUSSION

Intracranial extradural hematomas are known to occur following head trauma and 65-90 % cases are associated with skull fractures¹⁻³. Source of bleeding in these cases is usually from meningeal vessels, venous sinuses, or diploe veins. Spontaneous intracranial epidural hematoma is rare entity. First documentation of this was done by Schneider and Hegarty in 1951⁴. Till now only 19 cases of nontraumatic EDH have been reported^{5,6}. Different underlying diseases have been associated with spontaneous EDH which may be grouped in three groups⁷. First and most common is patients having local infections of head and neck such as sinusitis, ear infections or infections in alae nasae. Infections can erode wall of meningeal vessels and collection of inflammatory substances in extradural space further augmenting the process of extradural formation. Second group consists of patients with extradural malignancies which erode the meningeal vessels to lead spontaneous EDH e.g. metastasis from hepatocellular and ovarian carcinoma, malignant fibrous histiocytoma, Langerhans cell histiocytoma etc. Third group consists of patients with collagen vascular disorders like systemic lupus erythematosus causes degeneration of vessels wall leading to EDH or patients with coagulopathy like in decompensate liver failure, chronic renal failure, thrombocytopenia etc.

CT criteria of conservative management of EDH include a volume of less than 30 ml, a thickness of EDH less than 15 mm and a midline shift of less than 5 mm. The site of the EDH is also a basic factor that influences the clinical course, EDH in temporal region and posterior fossa are sites where conservative treatment not advisable⁸. CT scan taken too early may also be misleading in patients having progressively enlarging EDH. Heterogeneous density of blood (Swirl sign) also suggests active bleeding in EDH. But these criteria are established for traumatic extradural hematoma where there is rapid development of hematoma with little time to accommodate hematoma and rapid clinical

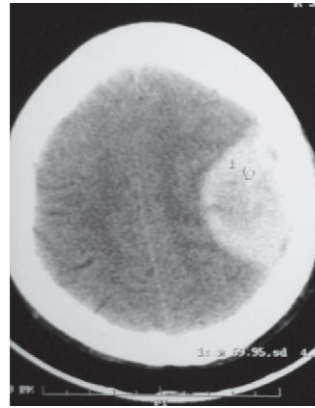


Fig 1

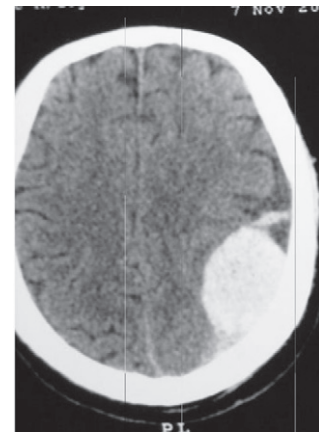


Fig 2

deterioration. But in cases of chronic renal failure, rate of development of extradural hematoma is slow, so clinically they are less prone to develop clinical deficits. They present similar to late onset EDH, which can be managed conservatively. Though our patient had CT criteria for surgery but he was managed conservatively as there was high risk of re bleeding and also anaesthetic complications during surgery. So it can be inferred that even relatively larger hematoma can be managed conservatively if patient's clinical condition is stable. On reviewing literature we have found only three cases which have been reported as EDH with chronic renal failure till now, with none presenting primarily with EDH. Two of them underwent surgery while one was managed conservatively. As EDH in chronic renal failure is rare

Summary of reported cases of spontaneous intracranial EDH with chronic renal disease

Author	Age/Sex	Hemodialysis at presentation	Site of hematoma	Management
Shablaie K	16/m	No	Left temporoparietal	Surgery
Shimokawa S	54/m	Yes	Right frontoparietotemporal	Surgery
Zheng et al	54/m	Yes	Right temporal	Conservative
Our case	38/m	No	Left frontoparietal	Conservative

entity, it is too early to say that these should be managed conservatively. Further observations are required to establish management protocol for them.

In cases of chronic renal disease spontaneous EDH is supposed to occur in those patients who were on hemodialysis^{5,6,9}. Various reasons have been explained for the cause e.g. there are rapid changes of intracranial pressure during hemodialysis because of changes in the serum and cerebrospinal fluid osmolality¹⁰; other causes may be coagulopathy because of heparin or platelet dysfunction as platelet dysfunction in CRF is known phenomenon and is because of uremia toxin, excessive synthesis of nitric oxide and contact of platelets with artificial surface during hemodialysis^{11,12}. Our case is quite unique where a patient of chronic renal failure had presented primarily with spontaneous extradural hematoma with neurologic deficits with no features suggestive of renal failure except for mild facial puffiness which was noticed on examination.

To conclude, spontaneous extradural hematoma may be associated with different co morbid conditions as described above. Neurological deficit in such cases require urgent neurological evaluation to find cause. In high risk patients like chronic renal failure, nontraumatic EDH may be managed conservatively in spite of significant mass effect, provided patients have no clinical deterioration. But they should be monitored closely so intervention can be done immediately if any evidence of deterioration.

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