Chronic Subdural Hematoma development in Accelerated phase of Chronic Myeloid Leukaemia presenting with seizure and rapid progression course with fatal outcome

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Abstract: Occurrence of chronic subdural hematoma (CSDH) in leukemia is rare, and most reported cases occurred in relation with acute myeloid leukaemia; however, occurrence is extremely rare in accelerated phase of chronic myelogenous leukaemia (CML). Seizure as presentation of SDH development in CML cases is not reported in literature. Authors report an elderly male, who was diagnosed as CML, accelerated phase of developing SDH. Initially presented to local physician with seizure; urgent CT scan head was advised, but ignored and sensorium rapidly worsened over next day and reported to our emergency department in deeply comatose state, where imaging revealed chronic subdural hematoma with hypoxic brain injury with fatal outcome. Seizure, progressive worsening of headache, vomiting and papilloedema are harbinger of intracranial space occupying lesion and requires CT head in emergency medical department for exclusion, who are receiving treatment of haematological malignancy.

Key words: chronic myeloid leukaemia, accelerated phase, chronic subdural hematoma, management, seizure

Introduction

SDH is an important cause of morbidity and mortality and its common aetiology includes trauma, medications i.e. anticoagulants, antiplatelets, chemotherapy; arterio-venous malformation, aneurysms and post-craniotomy. It is very rarely associated with haematological malignancy, mostly known to occurring with acute myeloid leukaemia; however occurrence in chronic myelogenous leukaemia (CML) is unusual and about less than ten are reported to developing in accelerated phase. (1, 2, 3, 7, 10) Management of SDH requires appropriate computed tomography (CT) scan of head to detect amount of hematoma, mass effect, and suitability of surgical intervention and presence of co-morbid illness. Temporary measures may include administration of antiepileptic and cerebral decongestants.

Cornerstone of management is burr-hole drainage of SDH, rarely craniotomy is indicated if membranes are well organized and thick.

Case report

61 year old gentle man reported to emergency services in altered sensorium with history of respiratory distress for past two days. He had no previous history of trauma. Although diagnosed as chronic remission phase of CML for eight years, unfortunately he developed accelerated phase since three months and kept on chemotherapy. Co-morbid illness included history of acute coronary ischemia two months back. He developed headache and one episode of generalised tonic-clonic seizure unassociated with aura or postictal weakness. Evaluated by local physician at first encounter, CT scan head was advised but not done due to non-availability of CT scan facility at native place. He notice progressive worsening of headache and lapsed into comma next day and he was brought to emergency services in altered sensorium and respiratory distress. Examination in emergency department revealed pulse rate was 64 per minute and B.P. was 140/ 94 mm Hg, with G.C.S. of 4, with dilated and non-reacting left pupil and sluggishly reacting right pupil, fundi showed with bilateral papilloedema. He was immediately intubated and kept on ventilator support. Haematological evaluation showed anaemia with total leukocyte count (TLC) of 34100 and marked neutrophilia, peripheral blood smear showed anisocytosis with dimorphic R.B.C. Bone marrow aspiration and biopsy findings were consistent with accelerated phase of CML.

Urgent CT scan head showed presence of large chronic subdural hematoma over left fronto-temporo-parietal region with significant compressed ipsilateral lateral ventricle, sub-falcine herniation, midline shift of about 9 mm towards right side, trans-tentorial herniation along with evolving ischemic-hypoxic injury of brain (Figure 1). Urgent left frontal and parietal burr hole and SDH evacuation and drain placement was carried out. Post-operative CT head showed evidence of global ischemia (Figure 2). He succumbed within 24 hours of admission despite optimal efforts.

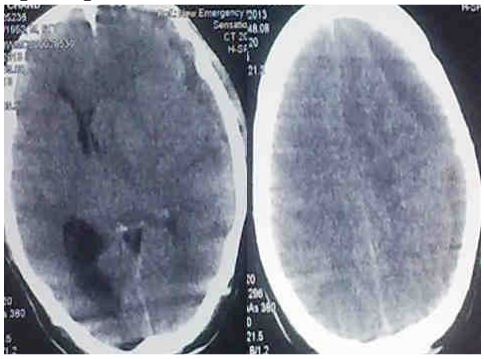

Figure 1 - NCCT head showing large chronic subdural hematoma over left fronto-temporo-parietal region causing sub-falcine herniation and gross midline shift

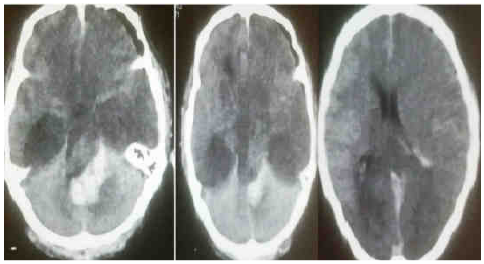

Figure 2 - Post-operative NCCT head scan showing diffuse hypoxic brain injury

Discussion

CML is characterized by increased proliferation of the granulocytic cell line without loss of capacity to differentiate. Its course is clinically sub-classified into three phases – chronic phase, accelerated and blast crisis. About 85 % CML patients remain in chronic phase, carrying favorable prognosis with maintenance chemotherapeutic agents, but can convert to other phases with unfavorable prognosis when untreated or chemotherapeutic resistant cases. Predominant factor in differentiating between accelerated and blast crisis is percentage of myeloblasts present in blood or bone marrow study. (6, 14)

Although tyrosine kinase inhibitors have revolutionized CML therapy with 80-90 % long- term survival rates (8). Few such cases on long- term chemotherapy can develop chronic SDH despite normal haematological parameters, and surgical treatment may be required if causing clinically symptomatic or producing mass effect. (7, 9) SDH is rarely reported in systemic haematological malignancies. (1, 2, 3, 7, 10, 11, 13) Exact mechanisms of SDH development is not clear, however, possible mechanism include malignant cells deposition in duramater leading to dural blood vessels occlusion and causing rupture of occluded vessels into subdural space producing CSDH. (11) Other postulates are tumour necrosis in metastatic deposits, thrombocytopenia, development of disseminated intravascular coagulation, and secondary adverse effect of chemotherapy administration. (7, 9) Druker et al, observed that incidence of intracranial haemorrhage in CML on medication is about 5 % in blast crisis, 1 % in accelerated phase and sharply falling to 0.6 % in chronic phase. (4)

Our case was in accelerated phase on chemotherapy. Seizure may be presenting symptom of intrinsic brain pathology or extra-axial intracranial lesion. Authors reported seizure can be the first presenting symptom in extra-axial lesions like pituitary adenoma. (12) Hauser et al reported causes of first onset seizure in relation to age, idiopathic category accounted for more than 50 % of cases but, only 45 % of cases in the oldest age group. (5) Amongst children, the greatest proportion were associated with neurological deficits, believed to be present since birth, among young age population (15-40 years) with an identified etiology included central nervous system (CNS) infection, tumor, neurological deficit since birth and birth trauma were identified as a cause with equal frequency. In adult age (35-64 years) with presumed causes trauma and neoplasms were equally responsible, but less frequent with cerebrovascular disease. However in the elderly population, most common cause was cerebrovascular disease which account for 28 % of all new cases. So seizure is important warning signs of harbouring intracranial pathology especially in young or elderly age, which require full investigation and accordingly appropriate treatment, patient should be referred to neurologist or neurosurgeon. However in our case unfortunate delay in CT scan led to delay in detection of SDH, which was only picked up in the advanced stage and although urgent surgical intervention could not provide good outcome. Hence authors recommend every case of seizure and associated symptoms of raised intracranial pressure need full clinical evaluation including appropriate neuro-imaging.

Conclusion

This case report highlights the importance of urgent diagnosis and appropriate neurosurgical intervention in cases of underlying systemic haematological malignancies with high index of suspicion for raised ICP owing to suspected intracranial bleed. Seizure, progressive headache, vomiting and papilledema on fundus examination are warning signs of harbouring intracranial mass lesion, and every case should undergo at least CT head, which is economic, easily available and requires very short time to rule out life threatening intracranial pathology. Proper awareness among physician in medical emergency department is of paramount importance to avoid such delay and providing lifesaving therapeutic intervention at the earliest opportunity.

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