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# Ictal abdominal pain heralding parietal lobe haemorrhage

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We present an unusual case of ictal abdominal pain occurring in the setting of parietal lobe haemorrhage. The role of the somatosensory area I in pain perception is postulated.

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Key words: abdominal seizure; parietal lobe; intracerebral haemorrhage.

#### INTRODUCTION

Intracerebral haemorrhage often presents as headache with neurologic deficit, sometimes accompanied by partial (motor) seizures with, or without, secondary generalization. Pain of various body parts can be ictal phenomenon but it is not a recognized initial presentation of intracerebral haemorrhage and in particular, parietal lobe haemorrhage<sup>1-3</sup>. Abdominal pain as an ictal phenomenon has been described in patients with parietal lobe tumours, anoxic insults and after trauma<sup>1-3</sup>. In some of the cases, neuroimaging studies have been normal and the cause not known. Unexplained, recurrent abdominal pain can also be symptomatic of metabolic disorder such as acute intermittent porphyria or lead poisoning. We describe a patient with epigastric pain and repetitive motor activity involving the abdominal wall musculature as an ictal phenomenon, symptomatic of a parietal lobe haemorrhage. The role of the somatosensory area I in pain perception is postulated<sup>4</sup>.

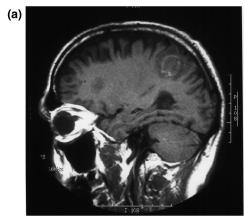
#### CASE REPORT

An 81-year-old male had a history of Paget's disease and atrial fibrillation (not on warfarin). He woke up at 3 am with 'thumping pain' deep in his epigastrium and left hypogastrium, abdominal twitching and diaphoresis, lasting 20 minutes. At the same time, the patient experienced a severe bifrontal headache. There was no nausea, vomiting, diarrohea, chest discomfort or shortness of breath. The patient was found to have left-arm incoordination, hence non-enhanced CT of the brain was performed. The patient had a total of five episodes of abdominal pain and twitching of the abdominal musculature (left hypogastrium) over the next 24 hours, each lasting approximately 15-20 minutes. None of these episodes were preceded by an aura, change in level of consciousness or generalized tonicclonic seizure.

The abdomen was non-tender and there was no abdominal mass on palpation. The bowel sounds were normal. Neurologic examination revealed normal cranial nerves and mild pronator drift of the left arm. The patient had mild left facial weakness and mild weakness of the left arm (Medical Research Council grade 4 + /5) and normal strength in the other limbs. Deep tendon reflexes were normal and the Babinski responses were flexor. There was decreased stereognosis in the left hand and difficulties with copying a complex figure. There was normal joint position sense and vibration sense. Touch sensation in the limbs and abdomen was normal, however the patient had extinction to double simultaneous stimulation on the left arm. A quivering movement was observed in the left hypogastrium during one of the episodes. At follow-up a year later, the neurologic examination was normal.

The initial non-enhanced CT and MR imaging showed acute haemorrhage in the right parietal lobe. The haemorrhage involved the right post-central and pre-central gyrus and extended towards but did not reach the lateral ventricle (Fig. 1). There was no evidence of cavernous haemangioma or arteriovenous malformation as a cause of the haemorrhage. Electroencephalography on the day of admission showed 1–2 Hz low amplitude slowing over the right centroparietal region. During the recording a right centroparietal electrographic seizure was recorded that was associated with the patient's characteristic paroxysmal symptoms of abdominal pain and abnormal motor activity (Fig. 2). There was no evidence of myocardial infarction on electrocardiography and measurement of cardiac enzymes.

With resolution of the abdominal pain and twitching, the patient was discharged from hospital. However, after several days, the patient complained of a recurrence of the left flank pain. The patient was started on phenytoin with no further attack for seven months. While on phenytoin, the patient had complained once of a strange sensation in his head. The partial seizure recurred once, 5 months after phenytoin cessation, and did not recur after restarting phenytoin.



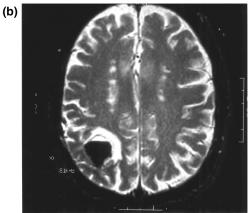


Fig. 1: (a), Sagittal T1-weighted; (b), axial T2-weighted MR imaging showing the right pre-central and post-central gyrus haemorrhage.

#### DISCUSSION

The ictal semiology and electroclinical correlation would support the presence of partial seizure activity. The patient experienced simple partial seizures with ictal behaviour consisting of abdominal pain and repetitive clonic activity in the left hypogastrium. The development of the partial seizures was intimately related to the presence of an acute parietal lobe haemorrhage. The intracerebral haemorrhage was most probably associated with amyloid angiopathy. In addition, these seizures responded to phenytoin and recurred on its cessation. Patients with complex partial seizures of temporal lobe origin may complain of an epigastric rising sensation or butterflies in the stomach, however, these symptoms suggest discomfort rather than pain such as in our patient. The ictal pain in our patient remained localized to the abdomen. This is similar to the finding in a recent study, which noted that ictal abdominal pain rarely spread to involve other body parts<sup>1</sup>. As distinct from those patients who were noted to have the occasional seizures with secondary generalization, our patient had only simple partial seizures. Patients with abdominal epilepsy may occasionally complain of nausea, bloating, diarrhea, headache, dizziness, fatigue and a sense of altered personality. Confusion and 'syncopal' episodes can be found in these patients<sup>5</sup>. Our patient did not have a 'psychic' aura such as fear and other emotions, associated with posterior parietal lobe seizures. The strange sensation in his head was experienced whilst he was on phenytoin and may have been a side-effect of this drug.

Previous reports on ictal abdominal pain have shown right parieto-occipital encephalomalacia, biparietal atrophy and bilateral perisylvian polymicrogyria<sup>1,2</sup>. The proximity of these lesions to the insula and sylvian fissure, and the reproduction of abdominal sensation in human and monkey by stimulation of the insula and sylvian fissure have been postulated to explain abdominal seizures<sup>2,4</sup>. The haemorrhage in our patient was remote from the insula, the sylvian fissure and the somatosensory area II (in the upper region of the sylvian fissure). Involvement of the somatosensory area I (situated in the post-central gyrus) was the likely cause in our patient. Although controversy exists regarding brain centres mediating pain perception, recent evidence indicates that the somatosensory area I can mediate pain perception<sup>4</sup>. It is possible that different localizations for abdominal sensation may exist. In a recent case report of right frontal lobe myxoma causing headache, abdominal pain and partial (motor) seizures, involvement of the supplementary motor area was the likely cause for abdominal pain<sup>6</sup>. We acknowledge that the site of the lesion does not always correlate with the site of the seizure and we do not have an ictal single-photon emission computed tomography scan to

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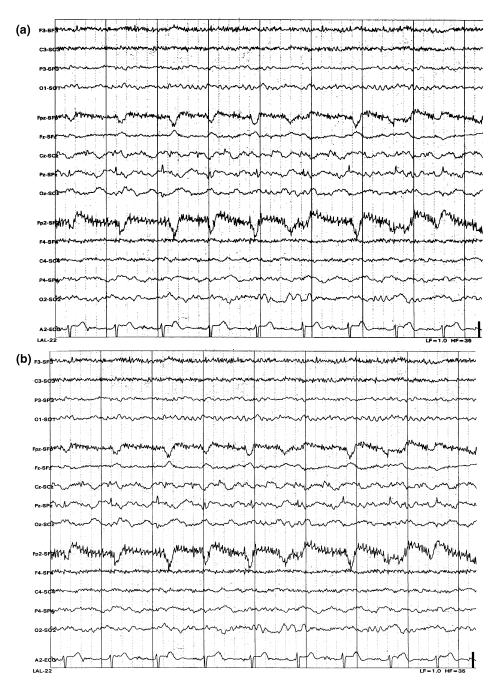


Fig. 2: (a), 2 Hz delta activity over the right centroparietal region corresponding with the patient's symptoms; and (b), return of the alpha rhythm with cessation of seizure activity during the same recording.

confirm our observation. It is conceivable that during the seizure, electrical excitation may spread to either the somatosensory area II or to the cingulate gyrus to mediate pain perception.

#### CONCLUSION

Parietal lobe haemorrhage may rarely present with ictal (abdominal) pain. In a patient with unexplained abdominal pain and a history suggesting symptoms remote from the abdomen such as limb weakness or incoordination, then a central cause of the pain should be sought. Our observation provide further evidence to support the role of the somatosensory area I in pain perception.

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