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Case Report Open Access

The Scanner: Uncommon Cause of Acute Delirium

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Introduction

Delirium is as an acute confusional state and is a common clinical syndrome characterised by altered conscious level, cognitive function or perception, which has an acute onset and fluctuating course. It is usually secondary to underlying medical illnesses including infection, pain, dehydration, acute coronary syndrome, bowel ischaemia, constipation, hypoxia or polypharmacy and develops over 1-2 days. Delirium is more common in persons with pre-existing dementia. It can be challenging to find the underlying cause of delirium on few occasions and if not recognised, can result in poor outcomes [1]. The aim of this case report is to ensure that rare causes of delirium are explored to enhance the medical care of the acutely ill older person.

Case report

An 84 years old man presented to the hospital with non-specific abdominal pain, acute confusion, generally unwell and not able to cope at home. He had a past medical history of hypertension, stroke, atrial fibrillation and osteoarthritis. He lived with his wife at home and was independent with activities of daily living and mobility. He has not been to the hospital for many years. He did not have any history of diabetes mellitus, urinary tract infections or symptoms of bladder outflow obstruction.

Figure 1: Abdominal X-ray.

On examination, he was febrile with a temperature of 38°C and tender palpable bladder. His chest was clear and he was in atrial fibrillation with the fast ventricular rate. Blood tests showed evidence of raised inflammatory markers with acute kidney injury on a background of chronic kidney disease. He had a positive urine dip and urine culture showed *E. coli* with RBC >1000. His blood culture was also positive for *E. coli*, confirming septicaemia.

He was reviewed by acute surgical and intensive care team and had plain abdominal radiograph followed by a CT scan of the abdomen (Figures 1-3).

Figure 2: Non-Contrast CT abdomen.

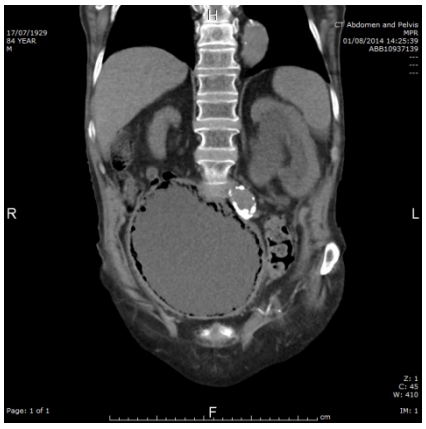

Figure 3: Non-Contrast CT abdomen 'oblique coronal 4 mm MPR' view.

CPD questions

1. What abnormality is present on the x-ray abdomen (AXR) (Figure 1) ?

2. What are findings present on the CT abdomen (Figure 2) ?

3. What other findings are present on the CT abdomen (Figure 3) ?

4. What is the cause of the current illness ?

5. How should this be treated ?

Answers

1. Distended bladder with gas within the bladder wall can be observed in the AXR.

2. There is widespread air within the wall of the bladder.

3. CT scan 'oblique coronal 4mm MPR' showing the hydronephrosis of the left ureter and left kidney. In addition, the air in the bladder wall can be seen.

4. Acute delirium is likely secondary to emphysematous cystitis (EC).

5. Initial treatment includes intravenous broad-spectrum antibiotics in keeping with sensitivity results, fluid resuscitation and continuous bladder drainage [2]. Only 10-20% of cases require surgical treatment [3].

Discussion

One-third of critically ill patients admitted to an intensive care unit develop delirium, which is strongly associated with increased hospital mortality and prolonged hospital stay [4]. But a prompt timely diagnosis of delirium improves clinical outcomes. Routine laboratory tests including complete blood cell count with differential, inflammatory markers; renal functions and electrolytes; glucose; liver functions; thyroid functions; vitamin B12 or folate levels and microbiological tests including cultures, may be helpful for diagnosis of the underlying cause of delirium. Drug screen, alcohol level, HIV tests, although not performed routinely can also be performed to find the underlying cause of delirium. A chest radiograph can be used to exclude pneumonia or congestive heart failure and neuroimaging including a CT and magnetic resonance imaging (MRI) scan of the head can be helpful to exclude stroke, haemorrhage or space-occupying lesions of the brain. Finally lumbar puncture and electroencephalogram (EEG) have been recommended to exclude rare causes of delirium like non-convulsive status epilepticus, herpes encephalitis or bacterial meningitis.

Older people could present with non-specific symptoms of acute abdominal pain secondary to bowel ischaemia, sigmoid volvulus and biliary tract disease including cholecystitis, peptic ulcer disease including perforation, abdominal aortic aneurysms, bowel obstruction or diverticular disease. However older people may present atypically as acute abdominal pain secondary to inferior wall myocardial infarction, pulmonary embolism, congestive heart failure, constipation, urinary tract infection, pyelonephritis or bladder outflow tract obstruction.

Therefore, a broader differential diagnosis must be considered in acutely unwell older patients with abdominal pain and rare causes like EC could be considered as a differential diagnosis for an underlying cause of acute delirium.

Our patient was a non-diabetic male who initially responded well to antibiotics and regained good functional abilities with rehabilitation. However, he had recurrent urinary tract infections along with left loin pain and blocked catheter and thus worsening of renal functions. He needed repeated courses of antibiotics. In view of this, he had repeat CT urogram 8 weeks later which showed a gross left hydronephrosis with dilated ectatic left ureter and 2.6 cm exophytic mass on left kidney margin suggestive of a renal tumour (Figure 4). This case was discussed in the urology multidisciplinary meeting and due to associated frailty, co-morbidities and delirium, medical treatment with palliative care was agreed.

EC is a rare clinical condition characterized by pockets of gas in and around the bladder wall [5,6]. Patients may complain of lower abdominal pain or lower urinary tract symptoms. Pneumaturia if ever reported can be highly suggestive of the diagnosis of EC. EC is reported commonly in the older women with uncontrolled diabetes mellitus and also associated with urinary stasis, neurogenic bladder and in renal transplant recipients [7]. The most common organism is E. coli [8]. Other organisms include Enterobacter aerogenes, Klebsiella pneumonia, Proteus, Staphylococcus aureus, streptococci, Clostridium perfringens [9], and Candida albicans [10].

Delayed diagnosis in such cases could result in further complications including infection to ureters and renal parenchyma, bladder rupture and death. This can be avoided by the early diagnosis supported by appropriate radiological investigations and prompt antibiotic therapy [2].

The strength of this case report is that it explores the rare cause of acute delirium in an older non-diabetic patient. We acknowledge the weakness as only one case has been discussed. We suggest further epidemiological and clinical case series from multiple centres to be evaluated to explore risk factors and clinical outcomes of EC.

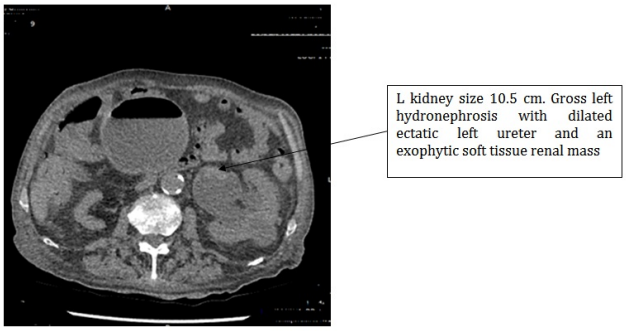

Figure 4: Repeat Non-Contrast CT abdomen.

Conclusion

Emphysematous cystitis is a rare medical condition and often missed on routine biochemical or clinical examination. Older people with acute delirium, presenting atypically with tender palpable bladder, EC should be considered as one of the differential diagnosis and clinicians should have a very low threshold to request appropriate radiological investigations.

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