An Unusual Cause of Confusion
Hepatic Encephalopathy in Hereditary Haemorrhagic Telangectasia

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ABSTRACT
This case report describes a 73 year old lady with a known Hereditary Haemorrhagic Encephalopathy (HHT) who presented with confusion. She had several previous self-limiting episodes over 3 months. She had known hepatic arterio-venous (AV) malformations. A urinary tract infection was detected and thought to be the cause of her confusion. However despite targeted antibiotic treatment her neurological state worsened (GCS 10/15) and she developed hepatic asterixis. Hepatic encephalopathy was confirmed with diagnostic EEG and elevated ammonia 211umol/l (<40). Laxative treatment had transient improvement but she was unsuitable for hepatic AV embolisation or liver transplantation. Hepatic encephalopathy is a rare complication of HHT with less than 10 previous documented cases.

Key words: Confusion, hereditary haemorrhagic telangectasia, hepatic encephalopathy

INTRODUCTION
Confusion is a very common non-specific disease in the elderly, often wrongly attributed to urinary tract infection. Delirium can have serious consequences in terms of long-term cognitive change, higher mortality and morbidity, and increased length of hospital-stay (1). It is important to find the cause of confusion as it can be reversible. Common causes include infection, electrolyte imbalance and medications. However, there are other causes which are less common and here we present the case of a 73 year old lady with a more unusual cause for her confusion.

CASE
We describe a case of a 73 year old lady with known Hereditary Haemorrhagic Telangiectasia (HHT) presenting to the medical admissions unit with an acute confusional state. HHT had been diagnosed 45 years previously. She was transfusion dependent secondary to chronic blood loss from gastric telangiectasia. She had ongoing history of a persistent right pleural effusion as a consequence of hepatic arterio-venous shunts, demonstrated by CT 6 months prior (Figure 1,2).
3 This effusion had periodically required drainage previously for symptom relief. Over the preceding 3 months she had experienced episodes of mild confusion and affect change, noted by friends and relatives. Each episode was self-limiting and lasted 1-2 days. However, one such episode required hospital admission, where despite thorough investigation (including MRI to exclude cerebral AV malformations) no cause was isolated. There was no history of any alcohol use. On admission she was afebrile with stable vital signs. Clinical examination was consistent with mild cardiac failure and a moderate right-sided pleural effusion, subsequently confirmed on chest radiograph.

There was no focal neurological deficit and her Glasgow Coma Score (GCS) was 14 (V4) with mild confusion and inattention consistent with delirium. Full blood count revealed a chronic normocytic anaemia (Hb 7.9 d/dl) and liver function showed a mildly chronically raised alkaline phosphatase. C reactive protein and urea and electrolytes were all within normal limits. CT brain demonstrated small vessel disease but no other abnormality. Urine culture grew Escherichia coli and Enterococcus sp. Oral trimethoprim was commenced and two units of red cells were transfused. Whilst there was clinical improvement and her GCS returned to normal there remained mild affect change, as noted by close relatives. On day 7 of admission worsening confusion was noted, and the subsequent morning she had deteriorated further with the GCS being 10/15. Bloods and clinical examination were unchanged except for the presence of a hepatic asterixis. Blood glucose and arterial blood gas analysis showed the known mild hypoxia, which despite correction with supplemental oxygen did not improve her confusional state. Repeat CT brain imaging revealed no new intracerebral event. A diagnosis of hepatic encephalopathy secondary to porto-systemic shunting was postulated. This was substantiated by diagnostic electroencephalogram confirming metabolic encephalopathy and further supported by a significantly elevated ammonia level of 211 umol/l (<40). Treatment was commenced with rifaximin, movicol™ (Macragol) and lactulose with resolution of confusion within 48 hours, which corresponded with bowel opening. Concordance with treatment fluctuated, possibly as a result of changing shunting patterns (telangiectasia and arteriovenous malformations) that affect organs including the skin, lungs, gastrointestinal tract and brain. Hepatic involvement is thought to be uncommon, with reported prevalence of between 8% to 31% (2). However, the exact prevalence of hepatic arteriovenous malformation (AVM) is still unknown (2). Intrahepatic arteriopetal portal shunts consist of abnormal communications between the hepatic arteries and the portal veins; in HHT they represent a congenital vascular malformation (4). In patients with HHT and symptomatic liver involvement, the typical clinical presentations include high-output heart failure, portal hypertension, and biliary disease (3). Clinical manifestations of liver involvement fluctuate, possibly as a result of changing patterns or other underlying pathology such as anaemia or cardiac failure (3). Presentation with hepatic encephalopathy secondary to porto-systemic shunting resulting from AVM caused by HHT is rare with less than 10 reported cases in the literature (2-5). Hepatic encephalopathy is a complex neuropsychiatric syndrome with many causes, the most common of which being chronic liver disease, but also acute liver disease, inherited disorders of urea cycle, (6) or intra-hepatic portosystemic shunting either iatrogenic or spontaneous as in this case (6). The clinical manifestation of hepatic encephalopathy can range from subtle abnormalities to coma. Mechanisms in the pathogenesis of this syndrome include the accumulation of unmetabolised ammonia and most proven treatment is based on this ammonia hypothesis (6). Proven treatments of hepatic encephalopathy include dietary protein restriction (during acute episode), carbohydrate enemas, restriction (during acute episode), carbohydrate enemas,
oral lactulose, oral rifixamin. The treatment of hepatic encephalopathy as a result of portosystemic shunt (iatrogenic or spontaneous) is usually managed along conventional lines (6). For refractory encephalopathy such as this case further management options for symptomatic hepatic AVM are limited but include hepatic artery embolisation, or liver transplantation, the former remaining controversial given the risk of fatal hepatic necrosis (2,4). This case further builds on the literature reporting this unusual manifestation of HHT with less than 10 cases of hepatic encephalopathy secondary to portosystemic shunts as a complication of HHT reported in the literature (2-5). Although rare this case is of relevance to clinicians due to the common presentation of confusion in the elderly, it highlights the importance of seeking unusual yet potentially treatable causes of confusion when initial treatment fails, particularly in complex patients with pre-existing disease (6).

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REFERENCES