CASE REPORT

A Lilliputian army under the floorboards: persistent delirium with complete though prolonged recovery

Dominique Wakefield,¹ Louise Thompson,¹ Stuart Bruce^{2,3}

¹East Sussex NHS Trust, St Leonards-on-Sea, UK

²Department of Elderly Medicine, East Sussex NHS Trust, St Leonards-on-Sea, UK

³Centre of Human and Aerospace Physiological Sciences, Kings College London, London, UK

Correspondence to

Dr Dominique Wakefield, domwakefield@doctors.org.uk

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SUMMARY

We report the case of an 83-year-old man who presented with a history of fluctuating delirium of insidious onset, secondary to an amoebic liver abscess more than 30 years after acute exposure. We describe a 2-year clinical journey that started with a fall and was additionally complicated by severe weight loss and acute kidney injury (AKI). The likely prognosis for such a combination of comorbidities in an older person is for lasting morbidity, institutionalisation and significant mortality. However, the case demonstrates that with timely assessment and care complete recovery is possible though it may take many months. It reminds us of the catalytic implications of falls for older persons and to maintain a differential diagnostic approach to delirium of insidious onset avoiding misdiagnosis as dementia with which it may be associated. Our case report includes extracts from the patient's own account providing added insight into such experiences.

BACKGROUND

Delirium is a common condition but frequently missed.¹ It is often associated with adverse outcomes particularly when, as in this case, delirium is persistent.² The significance of this case also lies in demonstrating that, despite several comorbidities worsening the prognosis of the primary diagnosis, complete recovery is possible in such circumstances given appropriate care. Having the patient as coauthor provides a holistic emphasis with quotations from his contemporary diary giving an additional dimension to our understanding of patient's experiences of such events.

This case reminds us of the benefits of well-coordinated, well-practised multidisciplinary care to achieve favourable outcomes especially when delirium is prolonged. It also reminds us that time-limited rehabilitation regimes may lead to an underestimation of the potential for recovery and to the consequent misdiagnosis of dementia with which delirium is frequently associated.³

CASE PRESENTATION

The patient's health problems began in late July 2009 when he tripped and fell in his bedroom at home while getting up during the night. He injured his head and neck but did not lose consciousness and there was no abdominal injury. Prior to this he had been fully independent, living at home with his wife and still working as a writer. After the fall he experienced gradually increasing fatigue with anorexia and dysphagia. Two months later he experienced the onset of delirium and impaired mobility.

Extracts from his diary and accounts from his family provide additional insight into his decline following the fall:

"It all followed my head-banging, neck-twisting fall". "According to my diary, 16th October I 'felt awful'. 'Can't bear the smell of food'. I had become unsteady on my feet. I had the first of my hallucinations: the Italian army coming to steal my notebooks. Followed by a workforce of little people making something beneath the floorboards. By 24th October my handwriting becomes increasingly shaky. I insisted that 1st November was Armistice Day. On 3rd November I am 'as weak as a kitten'."

"6th December, reportedly I went through the house convinced I was back in the army, allocating rooms for my platoon, becoming furious when I discovered there were not enough. My family called the emergency services. I remember awareness of being unable to answer straightforward questions."

Medical summary on presentation to Conquest Hospital December 2009: the patient was noted to be disorientated in time with impaired short-term memory, his Abbreviated Mental Test Score (AMTS) was 7/10. He also reported difficulties with concentration and his family emphasised the fluctuating nature of his mental state. During the period following the fall the only change in medication was a course of antibiotics for a chest infection in September 2009. It was noted that his work as a foreign and war correspondent involved an extensive travel history going back 58 years.

On examination, he was afebrile with marked hepatomegaly but no signs of chronic liver disease or other significant abnormal findings.

INVESTIGATIONS

Blood investigations on admission: haemoglobin 76 g/L with a neutrophil leucocytosis ($10.2 \times 10^9/L$), erythrocyte sedimentation rate 118 mm in 1 h, C reactive protein (CRP) 179 mg/L, abnormal liver function tests (raised alkaline phosphatase: 239 μ/L and low albumin: 27 g/L) with normal alanine transaminase and bilirubin. CRP rose to >200 mg/L. He also developed stage 1 AKI 1 week after admission, with a rise in creatinine 1.7 times the level prior to admission. Abdominal ultrasound showed a well-circumscribed cystic mass measuring $206 \times 167 \times 129$ mm, consistent with an abscess within the right lobe of the liver. This was confirmed by abdominal CT scan which showed no signs of malignancy. CT head scan showed no focal abnormalities. Amoebic serology was positive: cellulose acetate membrane

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precipitin reported positive and indirect fluorescent antibody test positive at a titre of 1:640.

TREATMENT

The patient was transferred to University College London Hospital (UCLH) where the abscess was drained and, after a month, he was discharged home to complete a course of paromomycin.

OUTCOME AND FOLLOW-UP

Further extracts from the patient's diary document his progress:

"After my admission to hospital I became convinced an American multi-millionaire was in charge and that the nurses were holding illicit parties. On my transfer to UCLH I believed that I was taking part in experiments to transfer patients between hospitals by cable car. Convinced that I was being transferred to a military hospital to help train special forces troops for a secret mission. I insisted to those attempting to calm me that their assurances were all part of the cover story. Once settled into UCLH, I was taking part in survival exercises in Mongolia."

"After I was discharged home the little people returned to beaver away under the floor boards."

Anorexia and dysphagia were prominent from the onset of his symptoms. Prior to his fall his weight was steady at around 110 kg. By the time of his admission to Conquest Hospital his weight had declined to 90 kg and on review in outpatients following discharge from UCLH his weight was noted to be 77 kg. This represents a loss of more than 20% of his usual body weight which persisted despite a period of nasogastric feeding and supplements prescribed on discharge. Oesophago-gastro-duodenoscopy as well as CT head was normal. Speech and language assessment identified pharyngeal dysphagia which had resolved by April 2010. By follow-up in March 2011 his appetite had returned to normal, he was independently mobile and finishing a book that he had been working on prior to his illness. However he did not regain the weight he had lost until August 2011. Two years further on from his recovery, the patient remains well and his latest book has just been published (August 2013).

DISCUSSION

There have been two recent case reports of amoebic liver abscess in older people.^{4 5} Both mention acute confusion as a presenting feature and fully discuss problems of diagnosis and management but emphasise these aspects. Our report focuses on outcome and factors that might have impeded a full recovery.

Overall mortality from amoebic liver abscess has been reported to be up to 18.5%.⁶ Factors worsening prognosis relating to the abscess are its size (volume >500 mL), whether multiple abscesses were present, the presence of jaundice, albumin level and alteration of consciousness.⁶ Although he was not jaundiced, his albumin level was low and alteration of consciousness was profound and prolonged. The abscess was single but its estimated volume was >1000 mL using the formula quoted by Sharma *et al.*⁶ The patient's prognosis was worsened by the development of AKI and by his profound weight loss. As noted above he started to lose weight after his fall due to the onset of anorexia and dysphagia and this accelerated further with the onset of delirium 2 months later. The negative impact of undernutrition on delirium is well documented as independently increasing the risk of institutionalisation.⁷

Although measurement of cytokine levels was not possible, cytokine-induced anorexia is likely to have played a part in the severe feeding difficulties the patient suffered. We would also

like to highlight the potential contribution the fall had specifically on the development of pharyngeal dysphagia. Delayed onset of lower cranial nerve injury with a variable but potentially reversible course has previously been reported following neck injury.⁸

The patient's presentation fulfils the criteria for the diagnosis of persistent delirium.⁹ Confusion Assessment Method (CAM) score was 3 (acute onset with fluctuating course, inattention and disordered thinking).¹⁰ Delirium was persistent with symptoms spanning over a 4-month period, compared with the 4-week median follow-up reported in studies included in a systematic review of persistent delirium.⁹

The patient's delirium was likely to have been due to the severity of the inflammatory response caused by the amoebic abscess; this presentation is consistent with sepsis-associated encephalopathy (SAE). SAE is typified by diffuse brain dysfunction occurring secondary to infection in the body without overt central nervous system infection, the severity of which can range from mild delirium to deep coma. Current evidence highlights the link between SAE and long-term cognitive sequelae. Hence presentations of altered cognition in the presence of inflammatory states should alert the clinician to the potential for persistent delirium so as to avoid misdiagnosis as long-term cognitive impairment or dementia.¹¹

This case highlights the risks associated with persistent delirium which, particularly in older people, increases the likelihood of adverse outcomes, with incomplete recovery of functional and cognitive impairments and increased rates of institutionalisation and mortality.⁹ The added complications associated with the inflammatory process emphasise the need for appropriate follow-up, monitoring progress and managing problems as they arise, but also emphasises that when this is done adverse outcomes can be avoided or at least mitigated. The patient's story starts with a fall emphasising the importance of falls triggering potentially progressive declines in older people and therefore the importance of falls prevention. Reflecting on his extensive travel history it is likely that the original exposure took place at least 30 years previously in Ethiopia, demonstrating the importance of a complete travel history in the older patient. However his case particularly illustrates that severe cognitive and nutritional problems together with AKI, secondary to acute illness in an older person can be completely reversible but that clinicians must appreciate the length of time this can take. The patient's clinical journey spanned 2 years. He emphasises that his successful outcome is "without doubt a testament to my family, my bloody-minded determination and care of my GP, Dr Dixon as well as the support from a dedicated and clearly well coordinated community team." In such cases effective communication between secondary and primary care and the availability of

Learning points

- ▶ The importance of maintaining a broad differential diagnostic approach to gradual cognitive decline.
- ▶ Long-term multidisciplinary team support in acute as well as community situations may be necessary for effective rehabilitation of older people following severe acute illness.
- ▶ Despite multiple comorbidities each worsening prognosis, complete recovery is possible with appropriate and timely assessment, treatment and postacute care.

quality community services responsive to the individual needs of the patient are of paramount importance.

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REFERENCES

- 1 Young LJ, George J. Do guidelines improve the process and outcomes of care in delirium? *Age Ageing* 2003;32:525–8.
- 2 Adamis D, Treloar A, Gregson N, *et al*. Delirium and the functional recovery of older medical inpatients after acute illness: the significance of biological factors. *Arch Gerontol Geriatr* 2011;52:276–80.
- 3 Cole MG. Delirium in elderly patients. *Am J Geriatr Psychiatry* 2004;12:7–21.
- 4 Ritchie J, Harper A, Malykh V, *et al*. Amoebic liver abscess imitating metastatic caecal carcinoma. *Age Ageing* 2005;34:527–8.
- 5 Swaminathan V, O'Rourke J, Gupta R, *et al*. An unusual presentation of an amoebic liver abscess: the story of an unwanted souvenir. *BMJ Case Rep*. Publish online: 5 Feb 2013. doi:10.1136/bcr-2012-006964
- 6 Sharma MP, Dasarathy S, Verma N, *et al*. Prognostic markers in amoebic liver abscess: a prospective study. *Am J Gastroenterol* 1996;91:2584–8.
- 7 Bourdel-Marchasson I, Vincent S, Germain C, *et al*. Delirium symptoms and low dietary intake in older inpatients are independent predictors of institutionalization: a 1-year prospective population-based study. *J Gerontol A Biol Sci Med Sci* 2004;59:350–4.
- 8 Kaushik V, Kelly G, Richards SD, *et al*. Isolated unilateral hypoglossal nerve palsy after minor head trauma. *Clin Neurol Neurosurg* 2002;105:42–7.
- 9 Cole MG, Ciampi A, Belzile E, *et al*. Persistent delirium in older hospital patients: a systematic review of frequency and prognosis. *Age Ageing* 2009;38:19–26.
- 10 Inouye SK, van Dyck CH, Alessi CA, *et al*. Clarifying confusion: the confusion assessment method. A new method for detection of delirium. *Ann Intern Med* 1990;113:941–8.
- 11 Gofton TE, Young GB. Sepsis-associated encephalopathy. *Nat Rev Neurol* 2012;8:557–66.

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