BIPP madness; an iatrogenic cause of acute confusion*

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Abstract

An 81-year-old man, admitted under the Ear, Nose and Throat Team with persistent epistaxis, developed an acute confusional state. He was previously physically independent and mentally competent. Immediate investigations did not reveal a cause for his deterioration. He eventually made a full recovery and returned home. Subsequently, his serum bismuth level was noted to be within the toxic range and was felt to have been the cause of his confusional state.

Keywords: acute confusion, bismuth toxicity, elderly

Case report

The Ear, Nose and Throat (ENT) Team referred an 81-year-old man with acute confusion. He had been admitted 10 days previously with epistaxis. Haemostasis had been difficult to achieve and after 4 days of nasal packing, he had required surgery and a 2 unit blood transfusion. There were no complications during or immediately after surgery. Two days post-surgery his condition deteriorated. He became acutely confused. His gait became unsteady. He developed dysphagia necessitating nasogastric intubation for nutrition and hydration. He had become doubly incontinent.

Prior to admission this gentleman had been mentally competent and physically independent. He had a past history of chronic obstructive pulmonary disease, but did not require regular medication. He had never smoked and drank less than five units of alcohol per week.

On examination, he was conscious with a Glasgow Coma Score of 14/15. His speech was dysphonic. Abbreviated Mental Test (AMT) score was 1/10. He was afebrile.

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Key points

• Ciprofloxacin is a rare cause of toxic epidermal necrolysis (TEN).
• Management is mainly supportive.
• Patients are best managed in a burns unit.
• Prognosis deteriorates with increasing age.

References


An iatrogenic cause of acute confusion

and there were no localising signs of infection. He was unable to cooperate with full neurological examination but there was no apparent abnormality of the cranial nerves and examination of the peripheral nervous system showed normal power and reflexes. His gait was severely dyspraxic. There were no other abnormal signs.

All our investigations were normal including full blood count, C-reactive protein, erythrocyte sedimentation rate, biochemistry, serum glucose, cardiac enzymes, electrocardiograph, chest radiograph and computerised tomographic brain scan. Urine and blood cultures were negative.

He remained unwell for 3 weeks before making a gradual recovery to his pre-morbid level of health. AMT improved to 10/10 and his gait dyspraxia resolved. At discharge, we had no explanation for his acute confusional state.

Subsequently, we received the result of a serum bismuth level, which had been requested by the ENT team when he first became confused. The ENT surgeon had used nasal packing with bismuth iodoform paraffin paste (BIPP) when prolonged packing with Merocel had failed to stop the epistaxis. His bismuth level had been 250 µg/l, which is within the toxic range. On review of the case, it was felt that bismuth toxicity was the most likely cause of his temporary, but prolonged confusional state.

Discussion

Toxicity from oral bismuth causing reversible encephalopathy is well described [1–4]. There are rare case reports of this syndrome resulting from bismuth usage in the form of BIPP [5, 6]. The first cases of bismuth toxicity were reported in Australia in 1973. Patients had been treated with oral bismuth subgallate for a variety of gastrointestinal disorders. There is often a prodrome of irritability, reduced concentration and memory impairment. Confusion and agitation follow, and gait becomes dyspraxic. Myoclonic jerks and tremor are common [1–3]. The onset is usually sub-acute and reversible on withdrawing the drug.

The mechanism of intoxication is not fully understood [3]. It has been postulated that bismuth interferes with the oxidative metabolism of the central nervous system – binding thiol groups of essential enzymes and reducing cerebral blood flow [5]. It is not known why only selected patients develop encephalopathy. It has been suggested that oral bismuth needs to undergo methylation, by intestinal microbes, to enable it to be absorbed. This theory would help to explain how over 900 patients in a particular geographical area in France were affected in epidemic fashion in the 1970s [7]. Patients develop toxicity at different blood levels of bismuth, although the syndrome is rare with levels below 50 µg/l. Bismuth has a half-life of 20–30 days.

Ribbon-gauze impregnated with BIPP is an antiseptic dressing with many applications in oral and maxillofacial surgery and ENT surgery. Its uses include dressings for molar sockets, nasal packing and antral packing. Case reports of toxicity have resulted in reduced usage of BIPP, although it still has a role, particularly as in this case when haemostasis is difficult to achieve. Physicians should be aware of the applications of BIPP and the potential risk of bismuth absorption resulting in a toxic confusional state.

Key points

- Acute confusion can result from bismuth toxicity.
- Bismuth is still used in both oral and maxillofacial and ENT surgery, as an antiseptic dressing.
- Confusion usually resolves on withdrawal of bismuth.

References


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