Probiotics Provoked D-lactic Acidosis in Short Bowel Syndrome: Case Report and Literature Review

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Abstract

D-lactic acidosis is a rare complication of short bowel syndrome. Clinically there are episodes of encephalopathy and metabolic acidosis with an increased anion gap. Formation of D-lactic acid by the abnormal gut flora, together with its impaired metabolism results in its accumulation and subsequent effect on the central nervous system. In this article we reported a boy with short bowel syndrome and D-lactic acidosis provoked by ingestion of probiotics. The probiotics are in the form of capsules and probiotic-containing formula. We had also reviewed the paediatric cases of D-lactic acidosis and discussed its biochemistry, pathogenesis, clinical features, diagnosis and treatment. With more understanding of its mechanism, we stated that D-lactic acidosis can be treated as well as provoked by probiotics.

Key words

D-lactic acidosis; Paediatric; Probiotics; Short bowel syndrome

Introduction

D-lactic acidosis has been well recognised by the veterinarians as a cause of metabolic acidosis in the ruminants.1 It occurs in ruminants overfed with grains or other readily fermentable carbohydrates. The gut floras ferment the carbohydrates with production of D-lactic acid and it is subsequently absorbed into the bloodstream. It was first described in human in 1979 by Oh et al.2

D-lactic acidosis is a rare complication of short bowel syndrome which may result from surgical resection of the intestine or intestinal bypass surgery for treatment of obesity.3 Clinically there are episodes of encephalopathy and metabolic acidosis with an increased anion gap.

In this report we presented a boy with short bowel syndrome who presented with repeated episodes of D-lactic acidosis following administration of a probiotic and a probiotic-added formula. We have also reviewed other reported cases of D-lactic acidosis in the literature. The clinical features, biochemical results and the modality of treatment were reviewed. Finally we will discuss on the use of probiotics and prebiotics in the management of short bowel syndrome and D-lactic acidosis.

Case Report

Our patient is a Chinese boy who was born in Hong Kong in June 1996. At the age of two he was diagnosed to have stage III right adrenal neuroblastoma. The tumour was inoperable on presentation so he was commenced on chemotherapy. He was given a course of N6 protocol for neuroblastoma, which comprised of combination chemotherapy (cyclophosphamide, doxorubicin, vincristine, cisplatin, etoposide) plus monoclonal antibody 3F8. He could not tolerate the side effect so was switched to then OPEC combination chemotherapy (vincristine, prednisolone, etoposide, chlorambucil). After four months the tumour decreased in size and was resected with right nephrectomy and partial heptectomy, followed by chemotherapy and tumour bed irradiation. The