Chronic tropical pancreatitis with diabetes in a resource-limited setting

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Introduction

While the majority of diabetic patients in developing nations are type 2, other forms almost not known in the developed world, such as chronic tropical pancreatitis occasionally occur. Healthcare systems in developing nations are not able to meet the needs of patients with rare ailments. We present a fatal case of chronic tropical pancreatitis with diabetes and malabsorption syndrome. Our case illustrates the numerous difficulties faced by patients and their healthcare providers when treating such illnesses in resource-limited settings. They include diagnostic mislabelling, inappropriate management plans, poor referral systems, and lack of social support. Dedicated diabetes treatment programmes need to be developed to address these issues.

Case report

The patient was a 26-year-old female who presented with general body weakness for 6 months associated with weight loss, dry tongue, fatigability, palpitations worse on minimal exertion; but no swelling of limbs, cough, or dyspnoea. She also had a 4-month history of generalised painful skin sores. Eight years prior to this, she had been labelled as a case of type 1 diabetes at a district hospital after presenting with classical symptoms of polydypsia, polyuria, and weight loss. For the next 5 years she was treated with regular soluble insulin, 10 units before breakfast and a similar dose before supper. Three years prior to the present admission she was switched by the healthcare workers to metformin 500 mg thrice daily. From then on she noticed a progressive change in skin texture and hair colour (from black to brown), increasing weight loss, inability to digest food, and steatorrhoea after fatty meals. In addition she had anorexia and recurrent epigastric pain. She continued to receive metformin despite the worsening of her condition until she was advised by a relative to seek treatment from the national referral hospital of Mulago, where she was eventually assessed.

The patient was HIV sero-negative and the second-born of nine siblings; the others, and her mother, were all alive and well. She was raised on a diet mainly consisting of bananas, sweet potatoes, cassava, beans, and groundnuts. Meat and other animal proteins were rarely eaten. She was currently a non-employed para 2+1 with one living child, having had a stillbirth and an abortion at 8 and 2 months of gestation, respectively. She lived about 100 km away from Kampala, and had separated from her husband due to the illness. There was no family history of diabetes. The patient did not smoke or drink alcohol.

Physical examination revealed a young, wasted lady with a severely low body mass index (BMI) of 12.3 kg/m^2. She had thin, silky, sparse, easily breakable hair, and a generalised skin rash with hypopigmented lesions. She also had angular stomatitis, loss of tongue papillae, moderate to severe pallor, and oral thrush. She was fully conscious but lethargic, had a slow train of thought, short-term memory loss, and loss of both joint position and vibration sense in the big toe.

Investigations showed a random blood glucose of 14.8 mmol/l and haemoglobin of 6.3 g/dl. Renal and liver function tests were normal except for a very low albumin of 18 g/dl. Stool microscopy showed fat globules, but no cysts or ova. Abdominal X-ray showed pancreatic calcification and abdominal ultrasound showed diffuse calcification in the head, body, and tail of the pancreas.

A diagnosis of tropical chronic pancreatitis was made complicated by diabetes and malabsorption. The patient was managed on the Mulago Hospital Endocrine Unit with Mixtard insulin, vitamin supplements, blood transfusion, and pancreatic extracts. Glycaemic control was challenging because the patient easily became hypoglycaemic on low doses of insulin, until she was stabilised on only 5 units per day. The patients' relatives could not afford to buy intravenous albumin, as this was not available in the public hospital. The patient was discharged with good glyceamic control but failed to keep her appointment for review 2 weeks later. We were later informed by the family that the patient had passed away at home 1 month after discharge from the hospital.

Discussion

The combination of chronic progressive pancreatic destruction (with fibrosis and/or calcification), steatorrhoea, and diabetes mellitus is sometimes called 'tropical pancreatic diabetes' or 'tropical chronic pancreatitis'. It is generally believed to be related to preceding

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malnutrition, and is, therefore, often called 'MRDM' (malnutrition-related diabetes mellitus).[1] The classic form is associated with pancreatic calcification (visible on plain abdominal X-ray or ultrasound), and is sometimes called fibrocalculous pancreatic diabetes (FCPD). Where there is no such obvious pancreatic pathology, the term 'MMDM' (malnutrition-modulated diabetes mellitus) is sometimes used.[2]

MRDM occurs in variable geographical locations in Africa and other areas of the tropics, and the condition has had a controversial past. Other aetiologies in association with malnutrition have been considered – notably cyanide accumulation from cassava ingestion.[3] MRDM was an accepted sub-classification of diabetes by the WHO (World Health Organization) in the 1980s and 1990s, but was later removed.

Recently, evidence for the existence of MRDM has emerged from Ethiopia, where many diabetic patients from poor rural areas are young and with low BMI.[4–6] These patients often have a history of previous malnutrition,[7] and immunological and C-peptide studies suggest that a number of apparent 'type 1' patients lack typical immune markers and have evidence of significant beta cell function.[8] This also suggests that at least some of these patients may have MRDM rather than classical type 1 diabetes.

The case history presented here also raises important issues over management and healthcare resources. The misdiagnosis of the patient as 'type 1' is perhaps understandable, but prolonged treatment with metformin alone was not retrospectively appropriate, and led to clear deterioration in glycaemic control. More expert intervention at this stage would have been helpful, but this is of course not always easy in rural health environments.

The case also highlights issues of finance and diabetes care. As in most other resource-poor African countries, self blood glucose monitoring and glycated haemoglobin (HbA_{1c}) estimation were not available to our patient. Similarly, the range of insulins available to our patient was limited – also a well-known problem in sub-SaharanAfrica.[9] All these factors are likely to have led to the patient's poor obstetric history.

There is an urgent need to rethink the approach to diabetes in low-resource settings, with special emphasis laid on adequate training of healthcare workers, building capacity of health units to identify and manage rare presentations of the illness, and a holistic approach to the numerous issues that arise in these settings. Diabetes should be added to the list of priority diseases for attention in low-resource settings.

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