Calcific Pancreatitis and Goitre in Cassava Toxicity

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Abstract
A forty year old lady who was taking a cassava based diet developed calcific pancreatitis and goitre. There is one previous report of the association of goitre and calcific pancreatitis with cassava toxicity.

Introduction
Calcific pancreatitis of the tropics is a disease of unknown etiology occurring in young adults, and is associated with a high prevalence of pancreatic calculi and diabetes mellitus.1 Cassava toxicity is one of the factors incriminated in the pathogenesis of this disease. Unlike endemic goitre, which is a well substantiated sequel of cassava toxicity, there is only indirect evidence linking cassava intake and calcific pancreatitis of the tropics.2

Calcific pancreatitis and goitre were seen in a lady who was taking large amounts of cassava. There is one previous report of similar association between goitre, calcific pancreatitis and cassava toxicity.3

Case Report
A forty-year-old lady was admitted to the hospital with a hard swelling of three months' duration. The clinical features suggested a multinodular goitre. There were no signs of hyperthyroidism. Biochemically, she was euthyroid. She underwent a hemithyroidectomy. On histology the thyroid had features of a multinodular goitre.

Six years earlier she was seen in the gastroenterology unit when she reported with episodes of epigastric pain. She was diagnosed to have calcific pancreatitis on X-ray films of the abdo-

men showed pancreatic calculi (Fig.). An upper gastrointestinal barium series and oral cholecystogram were normal. The serum proteins (albumin—4 g dl, globulin—2.8 g dl) and serum calcium (9.6 mg dl) and phosphorous (4.5 mg dl) were within normal limits. She had glycosuria and the blood sugar was 250 mg dl. Her pain responded to paracetamol hydrobromide, antacids and pancreatic enzyme supplements. The relief of pain was accompanied by a return of the blood sugar to normal. She was well afterwards except for occasional episodes of abdominal pain which used to respond to paracetamol hydrobromide.

This lady had never consumed alcohol and there was no family history of pancreatic or thyroid disease. She had no features of malnutrition. From early childhood she was consuming around 100 g to 200 g of cassava per day for at least five days in a week. She used to take both fresh and dried tubers of cassava after cooking them in boiling water. The daily intake varied from 2000 cals to 2500 cals per day and the protein intake varied from 45 g to 60 g per day. The source of the protein was mainly beef and fish.

Discussion
The toxicity of cassava (Manihot utilissima) on the thyroid is due to the presence of the cyanogenic glycosides, linamarin and methyl linamarin. These glyco-
sides liberate hydrocyanic acid on hydrolysis. The hydrocyanic acid formed is detoxified in the body by the enzyme rhodanase which converts the toxic cyanide to the less toxic thiocyanate. Sulphur containing amino acids act as sulphur donors for this reaction. Thiocyanate, the end product of cyanide metabolism, is the goitrogenic factor. Chronic thiocyanate overload induces abnormalities in thyroid metabolism identical to those observed in iodine deficiency.4

Though cassava is the staple food in many areas of the world where calcific pancreatitis of the tropics occurs,5 the pathogenesis of pancreatic damage in chronic cassava toxicity is not known. It is postulated that sulphur containing amino acids are used up for the detoxification of cyanide and this leads to deficiency of these amino acids. This deficiency is manifested in protein calorie-malnutrition. Methionine deficiency is known to induce pancreatic damage.

Goitre is a well substantiated sequel of cassava toxicity. Epidemiologic evidence links calcific pancreatitis with some cassava eating populations.6 However it was believed that calcific pancreatitis and goitre do not occur in the same patient.7 This is possibly because of the supposed aetiological role of malnutrition in the pathogenesis of calcific pancreatitis of the tropics.8 But, as in our case, the previous case report of calcific pancreatitis in cassava toxicity9 also had no evidence of malnutrition.

It has to be emphasized that calcific pancreatitis and malnutrition are common in areas with increased...
cassava consumption. So caution should be exercised in interpreting these data as the association of common things may not imply cause and effect.

References