Discussion

Probably this patient's abdominal pain was related to his hyperlipidaemia, though its nature remains obscure. When given a high-fat intake he developed severe pain associated with gross chylomicronaemia; treatment directed at lowering his serum triglyceride rendered him symptom free. This patient is of interest because, atypically, his serum triglyceride concentration was raised only modestly, except during the attack apparently provoked by a high-fat intake. He was classified as having type IV hyperlipoproteinaemia, though he had intermittent fasting chylomicronaemia. Dietary restriction of fat did not prevent his attacks of pain, but carbohydrate restriction did, presumably by reducing his endogenous triglyceride production.

The distinction between types IV and V hyperlipoproteinaemia may well not be absolute, chylomicronaemia in the latter sometimes reflecting the degree of hypertriglyceridaemia rather than a different metabolic fault.⁵ Indeed, possibly the quantity of triglyceride to be transported may partly determine the size and nature of the transporting particles.⁵

This case re-emphasises the need to determine the serum lipid concentration in patients with obscure abdominal pain.

We should like to thank Mr A E Kark for permission to publish this case and Mrs D Bird for performing lipoprotein electrophoresis.

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High intestinal lactase concentration in adult Pakistanis

Lactose malabsorption in apparently healthy subjects has been reported as common among Africans, Asians, American Negroes, and American Indians. On the other hand, people of North European stock tend to have a low prevalence, always less than 20% and often about 6%. The difference has been explained on a genetic basis,¹ but is also an adaptation to the lack of consumption of milk among various races.

The present study was designed to estimate the prevalence or otherwise of lactase deficiency among adult Pakistanis according to various ethnic groups.

Ethnic background, milk consumption, and result of lactose tolerance test among 55 healthy adult Pakistanis

Groups	No studied	Estimated daily milk intake (ml)				Mean fasting blood glucose (mmol/l)	Mean maximum rise in blood glucose (mmol/l)	Maximum blood glucose rise of 1.1 mmol/l		No with gastro-intestinal upset
		0	250	250-500	500			No	%	
Punjabis	9	—	2	6	1	4.3	2.4	9	100	—
Sindhis	12	1	5	6	—	4.2	2.2	12	100	—
Baloochis	4	2	2	—	—	4.2	2.5	4	100	—
Pathans	15	3	10	2	—	4.5	1.8	15	100	1
Mohajirs	15	12	3	—	—	4.5	1.8	12	86	4

Conversion: SI to traditional units—glucose: 1 mmol/l $\approx$ 18 mg/100 ml.

Patients, methods, and results

After explanation of the procedure to be adopted, 55 healthy Pakistanis agreed to be investigated and were admitted to the medical ward of Jinnah Postgraduate Medical Centre. Blood samples were taken from the finger of each of the fasting patients. Lactose (Analar, Merck) 1 g/kg body weight was administered orally in 400 ml of water. Capillary blood samples were taken 30, 60, 120, and 180 minutes after the administration of lactose. Blood glucose was determined by the Nelson-Somogyi² method. Five patients had a 25-g xylose tolerance test which was normal in each case. A rise in blood glucose of less than 1.1 mmol/l (20 mg/100 ml) above the fasting level was considered to indicate lactose malabsorption. The patients were questioned about the frequency of consumption of milk and other dairy products, and symptoms of intolerance if any. They were observed for symptoms during the tolerance test and were instructed to report any symptoms occurring during the following 24 hours.

The group comprised nine Punjabis, 12 Sindhis, four Baloochis, 15 Pathans, and 15 Mohajirs of both sexes (table). Among the Punjabis, Sindhis and Baloochis there was no malabsorption, the mean maximum rise in blood glucose being 2.4 mmol/l, 2.2 mmol/l, and 2.5 mmol/l (43, 40, 45 mg/100 ml) respectively. All the Pathans had a rise of more than 1.1 mmol/l (20 mg/100 ml), the mean maximum rise being 1.8 mmol/l (32 mg/100 ml). One Pathan, however, developed symptoms of intolerance in the form of diarrhoea. Three of the Mohajirs had a blood glucose rise of less than 1.1 mmol/l. These three, and one other patient with a normal lactose tolerance test (LTT) result, developed diarrhoea or colic, or both.

The three subjects with a rise of less than 1.1 mmol/l, and the Mohajir and Pathan who showed intolerance had a normal absorption after the xylose tolerance test.

Discussion

Our findings indicate that most adult Pakistanis have a high intestinal lactase activity. They therefore seem to be distinct from other Asian, Eastern Mediterranean and African races. Racially, Pakistanis are grouped as true Mediterraneans (Punjab); Oriental Mediterranean (Punjab and Sind); Pashtuns (North-West Frontier Province); and Brachycephalic Baloochis of Iranian stock (Aryans).³ The Mohajirs come from all over India and are a mixture of those shown above and Dravidians.

Environmental adaptation to milk consumption through the centuries may also have contributed. In the plains of Punjab milk consumption is fairly high. Even in the mountains of the north and deserts of the south, goats' milk and camels' milk form a substantial element of the diet. In contrast, the highest incidence of intolerance was found amongst the Mohajirs, in whom milk consumption was the lowest. The high lactase in the Pakistani may have helped him to survive epidemics of cholera⁴ in contrast to those in eastern parts of India. As has already been suggested, it may have caused an increased calcium absorption⁵ and protection from osteomalacia, which we rarely see in our hospitals.

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