tween plasma renin activity and plasma aldosterone (figure, circles). There was no significant difference between mean (SD) plasma potassium concentrations before and after instituting captopril treatment (4.27(0.39) mmol/l and 4.33(0.51) mmol/l, respectively).

Discussion

This study has shown that there is parallelism with plasma renin activity and plasma aldosterone when there is hyperactivity of the renin-angiotensin-aldosterone system in infants in heart failure. Although five plasma aldosterone samples were above the range of the assay, these corresponded with high plasma renin activity values and tend to support our conclusion.

Previous studies of normal infants have shown good correlation with plasma renin activity and plasma aldosterone in the normal range.² In older children of widely varying ages with salt depleting conditions there is a rise of both plasma renin activity and plasma aldosterone.³ By contrast exchange transfusion with acute blood volume loss results in increased plasma renin activity but no parallel rise in plasma aldosterone.⁴ In our study the patients were in a stable state compared with those undergoing exchange transfusion.

The effect of captopril is to block the conversion of angiotensin I to angiotensin II. The latter is one stimulus to the production of aldosterone and our study would suggest it is the major stimulus in infants in heart failure. We have shown that captopril at a dose of 1 mg/kg can effectively block this hormone system. Further studies of infants being treated for heart failure are required to determine the minimum dose required for effective blockade.

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Dysphagia due to oesophageal web

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SUMMARY An 8 year old boy developed a recurrent sensation of food sticking in his throat during meal times. Barium swallow examination showed an anterior oesophageal web at the level of C5. Symptoms disappeared after pharyngoscopy and dilatation of the web.

Case report

An 8 year old boy of mixed Asian and white parentage attended a school medical examination with a six month history of food sticking in his throat. He avoided eating meat, fish, eggs, and green vegetables, preferring soft foods that could be chewed easily. Frequent choking at mealtimes had lead to a decrease in appetite; liquids were tolerated

without difficulty. Systematic enquiry showed no additional symptoms and the medical history was unremarkable. His parents and siblings were well and there was no family history of illness of any sort. Physical examination was entirely normal.

INVESTIGATIONS

Haematological investigation showed a normal haemoglobin (128 g/l), but a moderately reduced mean corpuscular volume (75.4 fl, reference range 80-96 fl) indicated probable mild iron deficiency. More detailed investigations were not undertaken at this time. A one month course of ferrous sulphate (120 mg three times daily) was given, and as dysphagia persisted, he was referred to hospital for further assessment.

Dysphagia had been present for 12 months at the time of hospital review. Clinical examination

showed a thin looking boy with both height and weight on the third centile for age. There were no abnormal clinical findings. Haemoglobin was now 132 g/l and improvement in iron status was suggested by an increase in mean corpuscular volume to 83 fl. Measurements of serum iron, transferrin, and ferritin, together with platelet and reticulocyte counts were within the normal range. Repeated examination of stool specimens for occult blood was negative. Autoantibodies including antithyroid and parietal cell antibodies were not detected in the serum. A three day prospective record of food intake suggested a diet adequate in energy and protein but probably deficient in iron. Barium swallow examination clearly showed an anterior oesophageal web at the level of C5 (figure).

PROGRESS

On pharyngoscopy, appreciable pharyngeal narrowing due to an anteriorly situated web was confirmed. There was no evidence of malignant change. A biopsy specimen was taken from the web before successful dilatation. Histological examination showed acanthotic squamous epithelium with focal keratohyalin granule formation in the upper layers consistent with repeated mucosal trauma. No inflammatory changes were seen. At subsequent follow up the patient reported that his dysphagia had resolved.

Discussion

Postcricoid dysphagia is variously known as Paterson-Kelly syndrome, Plummer-Vinson syndrome, or sideropenic dysphagia. Paterson reported the association, usually in women, of dysphagia and glossitis and remarked upon an increased risk of malignancy occurring in the upper oesophagus, while Brown-Kelly found that some patients had a web in the cervical oesophagus and noted an association with anaemia.¹ The web generally consists of a thin fold of mucous membrane, as in our patient. A review of the literature suggests that the syndrome has only once previously been reported in a child.² This was in an anaemic 15 year old girl in whom the diagnosis of oesophageal web was made only on the occasion of her third admission to hospital for investigation of dysphagia. Knowledge of Paterson-Kelly syndrome therefore is almost exclusively derived from studies of adults. Our case is of particular interest both because the child is male and of very young age.

Although it is not essential to find evidence of iron deficiency before making a diagnosis of Paterson-Kelly syndrome,³ some studies have shown it to be strongly associated with postcricoid

Figure Barium swallow showing anterior oesophageal web at the level of C5.

web, and have lead to the conclusion that iron deficiency, commonly due to blood loss, plays some part in the pathogenesis of the web.⁴ Clearly, evidence for iron deficiency was slight in our patient and gastrointestinal blood loss excluded. We therefore suspect that the mild iron deficiency was not implicated in the web formation and may have been a consequence of poor dietary intake resulting from dysphagia. As webs are so infrequent during childhood, a period in which iron deficiency is commonly described, it may be that duration of anaemia is more significant than anaemia itself.

Webs can exist without giving rise to symptoms and as many as 10% of adults with iron deficiency but without dysphagia may be shown to have postcricoid webs on barium swallow.⁵ Thyroid disease, thyroid antibodies, and malignant disease

of the upper gastrointestinal tract are more common in iron deficient patients with webs than those without, suggesting that autoimmunity is a factor in Paterson-Kelly syndrome. It is reported that treatment with iron and correction of anaemia may sometimes relieve dysphagia but without necessarily altering the radiological appearance of the web itself. Whether such treatment has any effect on the estimated 5% risk of malignant change in the pharyngo-oesophageal region is uncertain.⁴

Oesophageal web remains an uncommon cause of dysphagia in childhood but one which may be suggested by careful history taking and clinical examination. Barium swallow can be diagnostic but false negative or misleading results sometimes occur particularly if reluctance to drink the barium results in poor dilatation of the pharynx insufficient for the web to be visualised.² The lack of information regarding postcricoid dysphagia in childhood makes the prognosis for our patient impossible to define. When the diagnosis is not made until adult life there may be a history of dysphagia going back to childhood. One such case, a male diagnosed at the age of 38, developed squamous cell carcinoma of the pharynx 10 years later.⁶ Our patient has so far only

been followed up for a few months but as the risk of malignancy is particularly worrying in a young child we plan to keep him under regular review with repeat pharyngoscopy at six monthly intervals, whether symptomatic or not.

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High compared with standard dose lipase pancreatic supplement

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SUMMARY Cotazym-S-Forte, a new pancreatic supplement containing 10 000 BP units of lipase activity per capsule, was compared with a standard dose pancreatin supplement (Pancrease) with 5000 BP units lipase activity in a randomised crossover trial. The number of capsules of Cotazym-S-Forte administered was half the usual number of Pancrease capsules and was associated with the same degree of fat absorption as Pancrease.

Relative deficiency of exocrine pancreatic enzymes occurs in about 85% of patients with cystic fibrosis.¹ Within any group of patients with cystic fibrosis there is a wide range of requirements for pancreatic enzyme supplements.² The large number of capsules required by some patients may contribute to poor compliance. If the number of capsules could be

reduced while maintaining adequate fat absorption this would be of benefit to the patients.

The aim of this present study was to compare a high lipase dose, enteric coated, enzyme supplement (Cotazym-S-Forte (Organon), 10 000 BP units lipase activity per capsule) with a standard lipase dose enteric coated, enzyme supplement (Pancrease (Cilag), 5000 BP units lipase activity per capsule). It was reasoned that the same degree of fat absorption could be achieved with half the number of capsules. This study was performed to test this hypothesis.

Patients and methods

Thirty patients with cystic fibrosis (20 boys, 10 girls) ranging in age from 1.3 years to 13.8 years (mean 4.7 years) participated in the study. Each patient had classic features of cystic fibrosis and a sweat chloride concentration >60 mmol/l on pilocarpine ion-