occasions; in none of these cases was *S dysenteriae* type 1 the causative organism. Two patients had bacteraemia.¹⁻³ Petechial rashes have been seen on some occasions in shigellosis,⁴ but they are quite different from rose spots—which have sharply defined borders and disappear on applying pressure. The size of the spots and absence of itching differentiate them from allergic rashes due to ampicillin. An upsurge of shigellosis due to *S dysenteriae* 1 has been recorded in Bangladesh since the end of war in 1971.⁵ Nevertheless, rose spots were not detected in any one of over 4000 patients seen during the last five years.

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¹ Ghon, A, and Roman, B, *Wiener klinische Wochenschrift*, 1915, **2**, 579.

² Brunaer, S, *Wiener klinische Wochenschrift*, 1916, **5**, 128.

³ Barrett, O, O'Connor, E, and Connor, J, *American Journal of Tropical Medicine*, 1969, **18**, 555.

⁴ Goscienski, P J, and Haltalin, K C, *American Journal of Diseases of Children*, 1970, **119**, 152.

⁵ Rahaman, M M, Huq, I, and Dey, C R, *The Journal of Infectious Diseases*, 1975, **131**, 700.

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Fan-shaped shadows due to pulmonary artery catheters: heparin prophylaxis

Since 1971 we have monitored all our patients with myocardial infarction with a Swan-Ganz catheter (5F single lumen or 7F thermolulution catheter) positioned in the pulmonary artery. If an AP chest roentgenogram showed that the catheter tip was located too far in the lung fields, the catheter was pulled back 5-10 cm. The lumen was used for intermittent pressure measurements, blood sampling, and intravenous drug administration; it was continuously flushed with glucose 5% in water (with lidocaine added when needed).

By early 1974 we had become aware of curious fan-shaped shadows occasionally observed in the lung fields (fig).¹⁻³ These sometimes resembled the triangular wedge found in pulmonary embolism, but we observed no other symptoms of this condition.

Left parahilar fan-shaped shadow (arrow) at the location of the tip of a Swan-Ganz catheter two days previously. This shadow disappeared over 10 days.

A retrospective analysis of 200 patients showed 20 instances of fan-shaped shadows in the area where the catheter tip had been located. In two patients we found two or three shadows associated with different positions of the catheter tip. The clinical course had always been uncomplicated, and the radiological signs had regressed rapidly.

To prevent thromboembolisms, we administered heparin (50 mg every 6 hours) whenever a Swan-Ganz catheter was used. In addition, KCl was no longer given through the pulmonary artery lumen. In a subsequent series of 201 patients, we found only nine fan-shaped shadows. Heparin had thus halved the incidence of fan-shaped shadows, but they had not been eradicated, suggesting mechanisms other than thromboembolism for their genesis.

Mechanical irritation of the blood vessel by the to-and-fro movements of the catheter tip, or tear of the wall of an arteriole by an excessively inflated balloon⁴⁻⁵ could also cause some fan-shaped shadows. This would explain why most (24/29) of the observed shadows were located close to the hilum.

Heparin treatment seems advisable whenever pulmonary artery monitoring is carried out: we have not observed a single haemorrhagic complication in our patient population, and the incidence of fan-shaped shadows was decreased by half.

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¹ Foote, G A, Schabel, S I, and Hodges, M, *New England Journal of Medicine*, 1974, **290**, 927.

² Goodman, D J, et al, *New England Journal of Medicine*, 1974, **291**, 777.

³ Kateman, I, et al, 15e Federatie Vergadering Nijmegen (The Netherlands), p 224, 1974.

⁴ Chun, G M H, and Ellestad, M H, *New England Journal of Medicine*, 1972, **284**, 1041.

⁵ Golden, M S, et al, *American Journal of Cardiology*, 1973, **32**, 865.

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Multiple small bowel strictures in a child and accidental potassium chloride ingestion

In the past decade it has become well recognised that enteric-coated potassium chloride tablets may cause strictures of the small bowel.¹ Experimental and clinical studies have shown that these strictures result from the rapid release of potassium chloride when the enteric coat disintegrates in the alkaline medium of the small intestine.² Despite the fact that slow release, non-enteric coated preparations of potassium chloride are virtually free of this complication,³ enteric-coated preparations are still marketed and new cases of intestinal stricture continue to be reported,⁴ typically in adults on long-term medication. We have failed to find any report of this complication in a child.

Case report

A 2-year-old boy was admitted to this hospital about 16 hours after swallowing an unknown quantity of his grandmother's "heart tablets." Gastric lavage retrieved four tablets, which were identified as Salupres, a combination of reserpine and hydrochlorothiazide around an enteric core of potassium chloride. He was discharged home after two uneventful days of observation, but readmitted ten days later with a 24-hour history of abdominal colic and bile-stained vomiting. An abdominal x-ray film showed a complete low small bowel obstruction. At laparotomy this obstruction was found to be caused by omental bands, which were adherent at two points to the antimesenteric border of the terminal ileum. Division of the bands relieved the obstruction, but at both these points the ileum showed a stricture to half its normal diameter for a length of some 3 mm. Two further similar strictures were found more proximally in the ileum, one of which lay at the apex of a short, non-obstructive, intussusception, which was easily reduced. It was elected not to resect the strictures since, firstly, they were not in themselves obstructive, and secondly the natural history of these early strictures is unknown.

On the tenth postoperative day the transverse abdominal incision disrupted. At resuture the opportunity was taken to re-examine the strictures, the most distal of which was found to be causing partial intestinal obstruction. This stricture was resected and a primary end-to-end anastomosis performed. Following this procedure he had repeated episodes of partial sub-acute intestinal obstruction. Barium follow-through examination confirmed the presence of an incomplete low small bowel obstruction. An elective laparotomy performed three weeks after the initial exploration showed that the three remaining strictures were more severe and were causing the obstruction. They were resected and bowel continuity restored by end-to-end anastomoses. The postoperative course was uneventful. Macroscopic examination of the strictures showed well defined circumferential scarring. Microscopically there was ulceration of the mucosa and submucosa extending to the serosa at the antimesenteric border of the bowel, and healing by fibrosis.

Discussion

This case of strictures caused by enteric-coated potassium chloride is unique, firstly in occurring in a child, and, secondly, because there were multiple strictures. In adults there is typically a single stricture which requires resection. At the initial laparotomy we thought that this approach was not justified in the presence of multiple, non-obstructive strictures. Subsequent experience with this patient indicates that in time such strictures become progressively narrower as healing occurs by fibrosis, and they ultimately produce intestinal obstruction.

¹ Schrader, W H, and Hitchcock, C R, *Journal of the American Medical Association*, 1964, **190**, 586.

² Boley, S J, et al, *Journal of the American Medical Association*, 1965, **192**, 763.

³ Farquharson-Roberts, M A, Giddings, A E B, and Nunn, A J, *British Medical Journal*, 1975, **3**, 206.

⁴ Ball, J R, *Lancet*, 1976, **1**, 495.

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Behaviour of multiple primary neoplasms

It has been established that the existence of one malignant neoplasm implies increased susceptibility to the development of a second.¹ Only three patients have been described with five separate primary malignant growths. We wish to report two patients, one of whom has had six and the other five separate malignant neoplasms.

Case reports

Case 1—In 1962 a 55-year-old woman had a cervical carcinoma treated by radiotherapy. Nine years later she developed two colonic neoplasms, one in the hepatic and the other in the splenic flexure. The excised specimens were locally infiltrating, annular, fungating, columnar cell adenocarcinomas, having invaded the full thickness of the colon and the surrounding fat. Early in 1976 a Bilroth I gastrectomy was performed for a gastric neoplasm, there being no metastases. The specimen showed a large ulcerating, fungating tumour 5 cm in diameter situated 2.5 cm from the pylorus; two small gastric polyps were present on the excised specimen. Histologically the tumour was a mucus-secreting adenocarcinoma with full thickness invasion. One of the gastric polyps completely separate from the former lesion contained a focus of adenocarcinoma.

In 1977 a mass became palpable in the right iliac fossa. This was cystic, 10 cm in diameter, and in close contiguity with several loops of terminal ileum, a length of which was removed with it. Histologically it was a leiomyosarcoma, the patient's sixth primary malignant neoplasm.

Case 2—In 1970 a 48-year-old man presented with a discrete carcinoma from the caecum infiltrating all layers of the bowel wall. Fifteen centimetres from this at the hepatic flexure was a small sessile polyp. Histologically both tumours were well-differentiated adenocarcinomas. Two years later an

annular, ulcerating tumour obstructing the small bowel 10 cm (4 in) distal to the duodenojejunal junction was excised; this was a well-differentiated adenocarcinoma. In 1974 a facial basal cell carcinoma was excised. The fifth tumour, a poorly differentiated rectal adenocarcinoma, developed in 1976.

Neither patient had evidence of metastases with any of their tumours. There was no family history of malignant disease and they are both alive and apparently tumour-free.

Discussion

Of 37 580 patients with malignant neoplasms at the Mayo Clinic, 1909 had two, 74 had three consecutive neoplasms, four had four, and one had five.¹ In addition to the two cases described only three other patients with five separate malignancies have been reported. Moertel's¹ patient had lesions in the breast, colon, skin, ureter, and uterus. Ostrowski² described a 51-year-old woman with malignancies of the ovary, cervix, uterus, bladder, and caecum, while Jones³ reported a 47-year-old man with separate lesions in the duodenum, jejunum, renal pelvis, splenic flexure, and pancreas. The 26 tumours in these five cases were often poorly differentiated, were locally invasive, but in none of them were distant blood-borne metastases or lymphatic spread reported.

Given a predisposition to the development of multiple malignancies it would seem unlikely to find 26 consecutive tumours of the nature described in these cases which had not metastasised by the time treatment was carried out.

In our case 1 two of the tumours were gastric; the overall cure rate of gastric cancer is about 8.5%^{4,5} and the incidence of lymph node metastasis at the time of surgery is 75%.⁵ In addition, two of the tumours were colonic, having invaded the full thickness of the colon and the expected cure rate is about 30% for each of these. It is still early for us to assess the success of treatment of the sixth tumour. It would appear that these multiple malignancies are behaving atypically. In addition to having an inherent predisposition to develop multiple tumours, these patients would also seem to have a resistance to the spread of their tumours, possibly from an altered immunological relationship between the tumour and the patient, though the nature of such an immunological response is unknown.

¹ Moertel, C G, Dockerty, M B, and Bagenstross, A H, *Recent Results in Cancer Research*, vol 7, p 191. New York, Springer, 1966.

² Ostrowski, J, *British Medical Journal*, 1975, **4**, 736.

³ Jones, P, *British Medical Journal*, 1976, **1**, 1533.

⁴ Lundh, G, Burn, J I, and Kolig, G, *Annals of the Royal College of Surgeons of England*, 1974, **54**, 219.

⁵ Costello, C B, Taylor, T V, and Torrance, B, *British Journal of Surgery*, 1977, **64**, 47.

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Basilar artery migraine with transient atrial fibrillation

Basilar artery migraine with impairment of consciousness is well recognised.¹ We wish to report a case of recurrent transient atrial fibrillation during attacks of basilar artery migraine with loss of consciousness and speculate on the mechanism.

Case report

A 46-year-old man with a family history of travel sickness and paternal migraine had had recurrent headaches with nausea and vomiting since childhood. At the age of 32 the pattern of his attacks changed. A typical attack began with a hot clammy feeling, dizziness, occasional rotatory vertigo, unsteadiness of gait, followed by prostrating bilateral occipital headache, nausea, and vomiting. His only visual disturbance has been photophobia and during attacks he has had paraesthesiae of the hands and arms but no dysarthria, dysphasia, or hemiparesis.