one week; one of them had a vaginocele after four operations for megaureters. In one patient all bags remained cloudy when dialysis was resumed, and cultures of the fluid grew *Candida parapsilosis*.

Comment

Our results confirm that the natural defences of the peritoneum can deal successfully with infection if unhampered by the dialysis fluid.[1] Temporary interruption of dialysis avoids protein loss and fluid retention due to peritoneal inflammation, limits the use of costly or toxic antibiotics, and preserves remaining renal function. We found that our patients, having been treated by interruption of dialysis once, subsequently tended to refer themselves early in the hope of being able to receive this short treatment again. The treatment avoids the loss of phagocytic cells and opsonins that occurs during dialysis and allows these cells to be concentrated into a small volume of peritoneal fluid, thus increasing the chance of phagocytosis. It also avoids the detrimental effect of dialysis fluid on phagocytic cells,[2] which may enhance survival of bacteria within leucocytes,[3] and on the mesothelial cells.[4]

Interruption of dialysis was regularly effective and was not detrimental to peritoneal function. We believe that this was because of our careful selection of cases and recommend that the treatment is used only in the absence of contraindications. Immediate failure of this treatment was unusual. If not due to the presence of unusual pathogens it would suggest persisting infection from colonisation of the catheter or, if infection were present at the exit site, covert infection around the catheter. In either case the catheter should be removed, as in relapse of peritonitis after conventional treatment.[5]

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Laxative properties of indigestible plastic particles

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The effects of wheat bran on faecal mass and transit time through the colon have been attributed to stimulation of bacterial growth and retention of water by the fibre matrix. Neither explanation is entirely satisfactory: bran can accelerate transit time in germ free rats,[1] and its water holding capacity is quite low and likely to be further reduced by the action of colonic bacteria. The fact that coarse bran has a greater laxative effect than fine bran suggests that the particles themselves may stimulate the colon. To test this theory we compared the effect of supplementing the diet with either coarse wheat bran or indigestible plastic particles cut to the same size as the flakes of bran.

Subjects, methods, and results

The study was carried out on 12 healthy male volunteers and consisted of three randomised 10 day periods, during which the men ate their normal diet either by itself or supplemented with 15 g plastic particles (<2 mm in diameter) daily or 37·5 g coarse wheat bran daily (calculated to provide 15 g undigested residue to the caecum daily).

All stools expelled in the last seven days of each period were collected in plastic bags and weighed. The volunteers kept daily records of their food intakes and episodes of flatulence. They assessed the consistency of all stools by comparison with standard photographs[2] and rated the ease of defecation on a visual analogue scale. To calculate the transit time through the whole gut the excretion of 15 radio-opaque markers ingested daily by each volunteer was measured fluoroscopically.[3]

The results from each 10 day period were compared with Student's paired *t* test and Wilcoxon's signed rank sum test. Both tests gave identical levels of significance.

The composition of the subjects' normal diet did not alter throughout the three study periods. Supplementation of the diet with plastic particles significantly increased faecal mass by about 40 g a day, increased the frequency of defecation, and reduced the transit time through the whole gut (table). The consistency of the stools was significantly softer when the volunteers ingested plastic. Differences in ease of defecation and episodes of flatulence compared with the period of normal diet alone were not significant.

Ingestion of wheat bran also significantly increased faecal mass and reduced the transit time through the gut (table). Frequency of defecation and the consistency of the stools were not significantly different from those during the period of normal diet alone. They were, however, similar in magnitude to those observed when plastic particles were ingested. There were no significant differences in any variable when the volun-

Mean (SE) measurements of bowel function in 12 volunteers during three study periods (ingestion of normal diet alone or plus plastic particles or wheat bran)

	Normal diet alone	Normal diet plus plastic particles	Normal diet plus wheat bran	Differences between periods: Plastic particles *v* normal diet alone	Differences between periods: Wheat bran *v* normal diet alone	Differences between periods: Wheat bran *v* plastic particles
Mass of faeces (g/week)	1060 (120)	1350 (140)	1560 (160)	287 (88)*	419 (181)*	161 (155)
Transit time through whole gut (h)†	54·2 (6·2)	38·2 (5·2)	42·3 (4·4)	−10·0 (3·5)*	−10·7 (3·7)*	−4·9 (3·1)
Stool frequency/week	6·9 (0·9)	8·3 (0·7)	9·1 (0·8)	1·4 (0·3)*	1·5 (0·8)	0 (0·7)
No of flatulent episodes/week	55 (19)	64 (23)	76 (27)	10 (10)	9 (10)	−3 (19)
Rating of stool consistency‡	5·6 (0·3)	5·1 (0·3)	5·1 (0·3)	−0·4 (0·2)*	−0·3 (0·2)	0·1 (0·2)
Rating of ease of defecation§	3·2 (0·6)	2·6 (0·5)	2·5 (0·5)	−0·6 (0·5)	−0·8 (0·5)	0·1 (0·2)

*p<0·05, Wilcoxon's signed rank test and Student's *t* test.
†Median of values obtained on days 6-10.
‡Scale ranging from 1 (liquid) to 8 (hard pellets).
§Visual analogue scale ranging from 0 (no effort) to 10 (extreme effort).

teers were eating plastic particles and when they were eating bran.

Comment

Supplementing the daily diet of healthy volunteers with 15 g inert plastic particles increased the stool mass by nearly three times the mass of plastic ingested, increased the frequency of defecation, and reduced the transit time through the whole gut. These effects may be caused by mechanical stimulation of mucosal receptors as stroking the intestinal epithelium can induce secretion and stimulate peristalsis.[4] The enteric nervous reflexes that induce these phenomena may be activated by direct stimulation of sensory nerve endings or through release of transmitters, such as histamine, serotonin, or prostaglandins, from mucosal or submucosal cells.

The similarity in the results we obtained during ingestion of coarse bran and plastic "fibre" and the observation that the laxative action of coarse bran is greater than that of fine bran suggest that at least part of the action of coarse wheat bran may also be mediated by mechanical stimulation of mucosal receptors. We think that our results may add a new perspective to the laxative action of bran, which could lead to the development of new fibre products.

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Importance of scrotal ultrasonography in gynaecomastia

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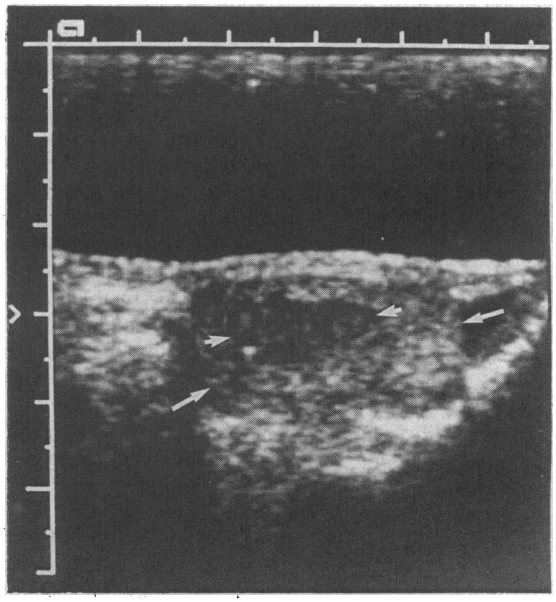
Failure to find an underlying cause for gynaecomastia is common. A testicular origin for feminisation is often excluded on clinical examination. We describe two patients with gynaecomastia and raised serum oestradiol concentrations who were found to have testicular tumours on ultrasonography of the scrotum, which were not detectable clinically.

Case reports

Two men (aged 28 and 26) presented with symmetrical gynaecomastia of four years' and six months' duration respectively. The second patient had had bilateral orchidoplexy at age 10, and his right testis was undescended but easily palpable in the superficial inguinal pouch. Both patients had undergone normal development in puberty with no gynaecomastia. Neither was taking any drugs, and both were otherwise well. The distribution of body hair was normal in both, although the first patient shaved only every second day, and the testes were smooth and regular but small.

Investigations showed low serum testosterone concentrations (5·0-7·0 nmol/l and 5·6-11·0 nmol/l respectively, normal range 11-36 nmol/l) and increased serum oestradiol concentrations (277-410 pmol/l and 300-430 pmol/l respectively, normal range <200 pmol/l). The corresponding serum concentrations of luteinising hormone (6·1-6·3 U/l and 6·0-10·0 U/l, normal range 2·0-8·6 U/l) and follicle stimulating hormone (1·4-2·1 U/l and 1·7-3·3 U/l, normal range 1·0-4·5 U/l) were normal. No abnormalities were detected in leucocyte karyotypes. Ultrasonography (and in the first patient computed tomography) of the adrenal glands yielded normal results. In both men ultrasonography of the scrotum disclosed a 1 cm mass in the lower pole of the right testis, which could not be felt (figure). In the first patient the left testicle was normal apart from its generally hypoechoic texture; in the second no abnormality was detected in the left testis. The tumours were confirmed at operation, and right orchidectomies were performed. Tumours of the Leydig cells were identified microscopically.

After operation the serum oestradiol concentrations fell to 105 pmol/l and 210 pmol/l at three and five weeks respectively, with a rebound rise of luteinising hormone (48·6 U/l and 21·0 U/l), follicle stimulating hormone (12·0 U/l and 16·0 U/l), and testosterone (20·8 nmol/l and 18·4 nmol/l) concentrations. Repeat ultrasonography of the left testicle in the first patient showed normal echo texture. He subsequently started shaving every day. The gynaecomastia did not subsequently improve in either case. Owing to the first patient's longer history fibrosis may prevent regression and plastic surgery may be required.[1]



Ultrasonogram of testicle (large arrows) containing tumour of Leydig cells (small arrows)

Comment

Identification of occult tumours of the testis by ultrasonography is an important but underused technique in investigating gynaecomastia. Feminising tumours of Leydig cells have previously been detected only by clinical examination. Thus in the largest review of gynaecomastia in all 37 cases caused by interstitial cell tumours the testicular mass was palpable.[2] Tumours of Leydig cells accounted for 1·2% of all the testicular tumours and about 20% of them caused gynaecomastia. Less than 10% are malignant, in contrast to feminising adrenocortical tumours, which are usually malignant. Occult testicular tumours have been diagnosed by ultrasonography in four patients.[3-5] An evaluation of the diagnostic criteria for tumours of Leydig cells has shown that whereas the tumour was localised by ultrasonography in all 12 patients scanned, including two with non-palpable lesions, the serum