had a blood pressure persistently greater than 140/90 mm Hg except the one patient being treated for hypertension. A family history of coronary heart disease was obtained in 22 cases.

Comment

High consumption of cigarettes, high serum cholesterol concentration, and high relative body weight appear to be the main risk factors for coronary heart disease in young soldiers. The low prevalence of hypertension and glucose intolerance may reflect the fact that these two risk factors, and possibly gross obesity, preclude recruitment. Only insulin-dependent diabetes results in premature discharge from the service; other risk factors are managed in the normal way. A positive family history is no more common in soldiers than civilians. The table shows the high cigarette consumption of young soldiers with coronary heart disease compared with healthy soldiers and healthy civilians.

Smoking habit of young soldiers with coronary heart disease, healthy soldiers, and healthy civilians

<table>
<thead>
<tr>
<th>Average No of smokers cigarettes smoked/day</th>
<th>Percent consuming:</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;20/ day</td>
<td>&gt;30/ day</td>
</tr>
<tr>
<td>Soldiers with coronary heart disease</td>
<td>95</td>
</tr>
<tr>
<td>Healthy soldiers</td>
<td>80</td>
</tr>
<tr>
<td>Healthy civilians*</td>
<td>45</td>
</tr>
</tbody>
</table>

*Data available from department of preventive medicine, Royal Army Medical College, London SW1.

Few studies on the risk profile of young men with coronary heart disease have been carried out, but heavy smoking and high blood cholesterol concentrations are more prevalent in young than middle aged patients with coronary heart disease. High cholesterol concentrations may be due to bias induced by familial hypercholesterolaemia. The disproportionately high mortality from coronary heart disease in junior soldiers seems to be due to the high prevalence of heavy cigarette smoking in the British army. British soldiers probably take advantage of the very low costs of cigarettes in some parts of the world. In the British army the expected protective effect of physical fitness is overwhelmed by the deleterious effect of high consumption of cigarettes.

Patients, methods, and results

Fourteen patients with impaired gastrointestinal function entered the study (one on two occasions). All were anorectic and judged to require nasogastric feeding as the sole source of nutrition. Twelve patients were admitted with acute exacerbations of inflammatory bowel disease (Cohn's disease, seven; ulcerative colitis, three; indeterminate inflammatory colitis, two), and two had the short bowel syndrome. All received standard medical treatment in addition to enteral nutrition.

Our aim was to administer a minimum of 2-1 litres of a chemically defined elemental diet (Vivonex TEN, Norwich-Eaton Pharmaceuticals). The diet (osmolality 630 mmol(mOsm)/kg) was infused continuously at 87 ml/h through a fine bore nasogastric feeding tube. The full prescribed volume or more of full strength diet was given in nine cases. In the remaining six cases either an unexplained disparity between prescription orders and the volume of diet administered or a technical problem with the feeding tube was responsible for reduced intake (table).

Details of intake of nutrients by 14 patients

Tolerance of elemental diet administered without starter regimen

An important aim of nutritional support is to achieve an overall positive nitrogen balance. In practice, we have found that this is not achieved in up to 40% of patients fed enterally. One reason for this is the use of starter regimens—that is, feeding initial elemental diets for 2-3 days to minimise possible gastrointestinal side effects. Over a short period of enteral feeding this can result in inadequate administration of nitrogen. In a recent controlled trial we showed that gastrointestinal side effects were not increased when a full strength polymeric diet was infused nasogastically from the outset of feeding to patients with normal gastrointestinal function. Because the starter regimen was omitted nitrogen intake increased and nitrogen balance improved.

Elemental diets have a higher osmolality than polymeric diets as they contain predigested nutrients. Their use has been suggested in patients with impaired gastrointestinal function. We undertook this study to investigate whether starter regimens could also be abandoned when an elemental diet is used.

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Upper gastrointestinal symptoms, graded 0 (absent) to 3+ (severe), occurred in only five of the 14 patients at some stage during enteral feeding. Three patients developed mild (1-3) transient nausea and two developed moderate (2-4) nausea that persisted for two to four days. Abdominal bloating did not occur. One patient experienced mild (1+) colicky pain that lasted three days, and one experienced moderate (2+) colicky pain that lasted six days. These symptoms did not slow down the rate of infusion. Stool wet weights decreased significantly during the study from 545 (SEM 330) g/24 h to 131 (70) g/24 h (p<0.01, n=7), as did the ileostomy effluent volume in one patient with the short bowel syndrome.

Comment

This study shows that an undiluted, hypertonic elemental diet, administered by continuous nasogastric infusion over 24 hours, was well tolerated by patients with impaired gastrointestinal function due to inflammatory bowel disease and the short bowel syndrome. The diet contained predigested, hypoallergenic nutrients. The incidence of gastrointestinal symptoms was probably normal for patients with acute inflammatory bowel disease. We did not have to reduce the rate of administration of the diet because of the patients' symptoms. Moreover, for clinical reasons the volume was successfully increased in two patients after several days of feeding.

These findings are similar to those of our previous controlled study, which showed that the incidence of gastrointestinal side effects was not increased when undiluted, hypertonic polymeric diet was given to patients with normal gastrointestinal function. When starter regimens, in which a full strength diet is not started until day three or four, are omitted patients benefit by receiving an estimated 60% or more additional nitrogen during the first three days of enteral nutrition.
Psosas abscess: unusual complication of effective chemotherapy for teratoma

Abcess of the psosas is now rare in the United Kingdom. We report two cases in which patients developed psosas abscesses after undergoing effective chemotherapy for bulky retroperitoneal deposits of teratoma.

Case reports

CASE 1

A 43 year old man who presented with backache was found to have a large retroperitoneal mass, lung and liver metastases, and a human chorionic gonadotrophin concentration of 800 000 IU/l. His condition precluded laparotomy, and retroperitoneal teratoma was presumptively diagnosed. He was treated with chemotherapy, comprising vincristine, bleomycin, cisplatin, methotrexate, etoposide, and cyclophosphamide. After eight courses the retroperitoneal mass had substantially diminished, the lung metastases had resolved, and human chorionic gonadotrophin was undetectable.

Four weeks after the last course of chemotherapy he complained of pain in the left hip, which was eased by flexion. Symptoms persisted over 10 weeks combined with increasing malaise, fever, and loss of weight. Human chorionic gonadotrophin remained undetectable, and leucocyte scanning did not localise any infective lesion, but on three occasions the fever resolved with antibiotic and antifungal treatment. Serial ultrasonography showed no change in the residual para-aortic mass, and he underwent laparotomy. At operation pus was discharged as the anterior mass was dissected, and an abscess cavity was entered through the psosas sheath. Pus was seen as far down as the brim of the pelvis, behind the iliac fascia. Culture of the pus grew Bacteroides fragilis. Histology of the excised material showed granulomatous tissue but no active tumour. After having seemed well on the morning after operation the patient had a cardiorespiratory arrest and died. Permission for postmortem examination was refused.

CASE 2

Ten years after undergoing orchidectomy and postoperative radiotherapy for malignant teratoma undifferentiated a 40 year old man developed a retroperitoneal mass (a fetoprotein concentration 706 IU/l). Laparotomy showed unresactable retroperitoneal tumour. Biopsy showed malignant teratoma undifferentiated, and he was treated with the same chemotherapy regimen as in case 1. After four courses ultrasonography showed that the mass had substantially diminished and the a fetoprotein concentration fallen to 16 IU/l. He complained of worsening malaise, “tightness” in the left hip, and difficulty in walking. After two further courses of chemotherapy the residual mass was excised at a second laparotomy. At operation the para-aortic mass was found to comprise a large abscess affecting the psosas muscle and extending to the brim of the pelvis. Pus was aspirated and the walls of the abscess partially resected. Culture of the pus grew B fragilis and lactose fermenting coliforms. Histology of the excised tissue did not show active tumour. He was given a course of intravenous antibiotics and made a satisfactory postoperative recovery.

Six months later his a fetoprotein concentration rose again. After one course of chemotherapy he again complained of pain in his left hip and difficulty in walking. At a further laparotomy a recurrent psosas abscess was again aspirated. Culture of pus grew B fragilis and lactose fermenting coliforms, but on this occasion histological examination of the abscess wall showed recurrent teratoma. Concentrations of a fetoprotein continued to increase but he refused chemotherapy. He died with progressive tumour three months later.

Comment

Psosas abscess is classically described as a complication of vertebral tuberculosis.1 Our patients developed abscesses after undergoing chemotherapy for retroperitoneal deposits of teratoma. Effective chemotherapy probably led to necrosis and formation of debris within the paravertebral masses followed by secondary infection.

Both patients initially had large retroperitoneal masses and responded to chemotherapy. Both subsequently developed symptoms that were partially masked by the general malaise associated with protracted chemotherapy. Over the past four years 55 patients with bulky retroperitoneal masses of teratoma have received chemotherapy in our unit, giving an incidence of this complication of about 4%. As combination chemotherapy for malignant teratoma becomes increasingly effective,2 however, this rare but important complication should not be overlooked.

We thank Mr R Quinn and Mr K Kyle for permission to report these cases.