hypoxaemia is present in many patients after myocardial infarction and it has been shown experimentally that hypoxia may predispose to ventricular fibrillation.[15] It is hoped, therefore, that oxygen administration by correcting the arterial hypoxia might reduce the incidence of ventricular fibrillation and other serious arrhythmias. Secondly, it has been suggested that by increasing the amount and tension of oxygen in the arterial blood oxygen treatment might allow improved oxygenation to the peripheral zone of the infarcted area of myocardium and thus reduce the final size of the infarct.[6]

We found no evidence that oxygen given to patients with uncomplicated myocardial infarction is beneficial in either of these respects. In particular, it did not appear to reduce the incidence of minor or major arrhythmias, and, indeed, the incidence of sinus tachycardia was greater when receiving oxygen. There was no improvement in left ventricular function as determined clinically or by measurement of systolic time intervals. Moreover, mortality was unaffected whether oxygen or air was breathed. On the other hand, a higher mean level of serum aspartate aminotransferase was found in those given oxygen. While this might be accounted for by chance allocation of patients with more extensive infarction to the oxygen group, or to the timing of blood sampling for biochemical examination, there is less than a 5% probability that this occurred. Alternatively, possibly oxygen treatment, far from being beneficial, actually produced a deleterious effect.

In normal people oxygen inhalation causes a reduction of cardiac output, largely due to a fall in heart rate, and a rise in systemic blood pressure.[16] Hence there is an increase in systemic vascular resistance that is due to a direct vasoconstrictive effect of oxygen. In patients with myocardial infarction the haemodynamic effects of oxygen administration are variable but broadly similar to those in normal people, a reduction of cardiac output occurring with maintenance of blood pressure. The heart rate is generally unchanged, but, again, a rise in the peripheral resistance occurs, although left ventricular work is not increased. It has therefore been suggested that on balance the haemodynamic effects of oxygen in myocardial infarction are beneficial, the rise in arterial pressure outweighing the fall in cardiac output.[17]

The metabolic changes that accompany oxygen administration have also been studied.[5 17] The arterial hypoxia commonly present in patients with myocardial infarction is usually eliminated by oxygen inhalation. Raised arterial lactate concentrations are also often found, and after treatment with oxygen in high concentrations these levels fall, suggesting that oxygen delivery to tissues is generally improved. In patients with ischaemic heart disease, however, abnormally raised coronary venous lactate levels may be produced or accentuated by inhalation of 100% oxygen.[18] It appears, therefore, that, despite overall improvement in oxygenation, oxygen delivery to individual organs is not necessarily increased. Cerebral,[19] renal,[20] and retinal[21] vasoconstriction has been reported and coronary blood flow is also reduced after inhalation of high concentrations of oxygen.[22] The decrease in myocardial blood flow prevents any additional oxygen delivery to the heart despite a considerable increase in arterial oxygen content; indeed, the decrease in blood flow may be so great as to reduce the total amount of oxygen available to the heart. Thus oxygen treatment far from achieving the desired effect of limiting the ischaemic area might actually result in an extension of the area of infarction, and this could offer one explanation for the increased aspartate levels found in the oxygen group in this study.

In conclusion, therefore, although we have obtained some suggestive evidence of a deleterious effect of oxygen, the findings are tentative. What has been shown is that the administration of oxygen does not appear to be of any benefit to patients with uncomplicated myocardial infarction. This does not mean, of course, that oxygen should be withheld from patients with obvious hypoxia, as in the presence of severe left ventricular failure, but there seems to be little place for routine oxygen administration to all patients with acute myocardial infarction.

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SHORT REPORTS

Carriage of yeasts on the penis

Candida infection is now the commonest condition diagnosed in women attending VD clinics.[1] There has also been an increase in candida balanitis.[1] How often the infection is sexually transmitted is uncertain, but known male contacts of women with candida infection often harbour the organism subpreputially.[2] Nevertheless, there seems to be no information about the asymptomatic carriage of yeasts in unselected men attending a VD clinic. This would provide additional useful information on the potential for sexual transmission, and is the subject of this report.

Patients, methods, and results

Cultures for yeasts were taken from the coronal sulcus and fossa navicularis of 205 new patients attending the Whitechapel Clinic. None was diabetic, and already known contacts of women with yeast infections were excluded. Gram-stained smears of material from the two sites were also examined for spores and mycelium, but as the first 100 specimens from the fossa navicularis were all negative only the coronal sulcus was subsequently examined. Primary isolation was on Sabouraud dextrose agar and candida (Oxoid) plates. *Candida albicans* was identified by germ tube and chlamydospore formation. Several of the other yeasts recovered were kindly identified by the Mycological Reference Laboratory.

Thirty of the 205 men had balanitis (12 were yeast-positive—all *C albicans*) and to avoid bias were excluded from the analysis. Of the 175 men without balanitis 32 (18%) had evidence of yeast infection. Twenty-four (14%) had positive cultures, smears also being positive in six of these (mycelium seen in one), and eight had positive smears alone (none had mycelium). Only one of the 32 had received an antibiotic in the previous three months. *Candida* species were isolated in 17 (10%); 10 (6%) were *C albicans*, two *C paropsilosis*, and five were unidentified but shown not to be *C albicans*. *Torulopsis candida* was isolated in three cases, making a total of 20 (11%) isolations of yeast species which might be potential causes of vaginitis. The sites of recovery are shown in the table. The remaining four positive cultures were of *Trichosporon cutaneum*.

Six (19%) of the 32 men carrying yeasts were circumcised compared with 35 (24%) of the 143 not habouring yeasts. Of the total 175 patients about 70% were from the UK or Eire and 20% from the West Indies. There was no significant difference in carriage rate in the racial groups or in the three main diagnostic groups. Thus nine (22%) of the 41 men with gonorrhoea, 13 (21%) of the 61 men with non-specific urethritis, and eight (17%) of the 47 men with no abnormality carried yeasts. Relatively few women contacts attended, but eight out of 11 contacts of the 32 yeast-positive men harboured yeasts in the vagina compared with six out of 25 contacts of the 143 yeast-negative men ($P < 0.02$).

Sites of recovery of candida and torulopsis

Species	Total	CS+ FN−	CS− FN+	CS+ FN+
C albicans	10	9	0	1
Other *Candida* species	7	4	2	1
Torulopsis	3	1	1	1

CS = coronal sulcus; FN = fossa navicularis.

Comment

The high carriage rate of yeasts in these patients suggests that sexual transmission could account for many instances of yeast infection in women. This is supported by the findings in the female contacts and the increasing incidence of genital yeast infection in both sexes reported by VD clinics.[1] Women might, however, acquire the organism in other ways and the male partner then be infected by sexual contact. The risk of the man infecting others will depend on how long the yeasts persist. Serial cultures were not taken in this study, but of the 20 men with proved candida or torulopsis infection 10 had not had sexual intercourse for two weeks or more, and four of these 10 not for one to three months.

We thank Dr D W R Mackenzie for identifying some of the isolates.

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Abdominoperineal resection in acute myeloblastic leukaemia

Anorectal infections may be the presenting feature in cases of leukaemia (1% of patients in a recent MRC trial[1]). They are often slow to heal, sometimes enlarge at a disturbing rate, and are a focus for disseminating infection in the presence of immunological impairment. We report what we believe is the first case of this nature treated by abdominoperineal excision of the rectum.

Case report

A 24-year-old housewife was admitted to hospital with a perianal abscess. She was very pale but there were no other abnormal physical findings. Blood examination showed Hb 5·5 g/dl; WBC 3×10^9/l (3000/mm^3), of which 99% were blast cells; platelets 50×10^9/l (50 000/mm^3). Sternal marrow biopsy confirmed the diagnosis of acute myeloblastic leukaemia. She was transfused with packed red cells, white cells, and platelet concentrate. The gastrointestinal tract was sterilised by giving nystatin and then adding framycetin and colistin. Under broad spectrum antibiotic cover the abscess was incised. It contained necrotic tissue—but no pus—from which coliform organisms sensitive to ampicillin were cultured. The leukaemia was treated by a regimen of cytotoxic drugs including daunorubicin and cytosine arabinoside.

Despite these measures the abscess extended to erode the left lateral rectal wall and adjacent ischiorectal fossa, establishing a faecal fistula, and continued outwards to the ischial tuberosity and up to but not through the pelvic peritoneum. Recurrent massive local haemorrhages required repeated blood transfusion. Three weeks after the incision septicaemia developed (*Pseudomonas pyocyanea*), which was complicated by acute tubular necrosis. Renal function recovered without dialysis. A defunctioning sigmoid colostomy was performed, which slowed the progress of the lesion, but by this time there was a large cavity with a skin defect of 8 cm × 10 cm (see fig) and spontaneous healing seemed impossible.

Finally, 10 weeks after presentation and coincident with bone marrow evidence of leukaemic remission, abdominoperineal excision of the rectum was performed with local and systemic antibiotic cover. After debridement of the abscess cavity the perineum was closed by primary suture. Remarkably, there were no postoperative complications and wound healing was satisfactory. The patient left hospital a month later. After one year the perineum remained healed. She continued on cytotoxic therapy.

Perinanal abscess cavity in patient with acute myeloblastic anaemia.

Comment

Walsh and Stickley[2] first described a case of acute leukaemia presenting with infected haemorrhoids. Anorectal infection occurred in 25% of all cases in one series of leukaemics,[3] although most of them had acute monocytic leukaemia, in which infection and necrosis at mucocutaneous junctions is most often seen. In leukaemia a perianal or ischiorectal abscess is unlikely to contain pus if the peripheral blood neutrophil count is low. Incision may then delay resolution. As white cell transfusions become more readily available they will probably be of value in these cases. Attempts to reduce the gut flora by giving non-absorbable antibiotics by mouth, as has been recommended[4] to prevent the spread of endogenous organisms in leukaemics during induction therapy, are unlikely to influence an existing anorectal infection. The place of local radiotherapy is not clear, although encouraging results have been reported in a random sample of cases.[5] It would seem to be justified when there is leukaemic infiltration.

Any major surgical procedure must be timed to coincide with a leukaemic remission. Defunctioning sigmoid colostomy is a logical step if conservative measures fail. The formation of a faecal fistula or the presence of faecal incontinence are absolute indications for diversion. Abdominoperineal excision of the rectum, however drastic it may seem to have been, clearly salvaged this patient, whose abscess would have taken months to heal and at times might have been life-threatening.

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