

Our attention was first drawn to this association when in the course of a month three patients developed complications from chronic duodenal ulcer while recovering from arterial operations. We were also impressed by the large proportion of patients with a history of previous gastric operations among those who presented with ischaemic symptoms of the lower limbs.

Prompted by these clinical observations we studied the inpatient records of 180 consecutive patients admitted to Hammersmith Hospital between the years 1964-9 for investigation of ischaemic symptoms of the lower limbs. All were males above the age of 50 years. In every case arterial lesions compatible with the diagnosis of arteriosclerosis were demonstrated on arteriography.

Although at the time of admission no special attention was paid to dyspeptic symptoms 38 (21.1%) of the 180 patients were recorded to have peptic ulcers or a history of such; 23 had had gastrectomy, one vagotomy and pyloroplasty, one closure of a perforated duodenal ulcer, and in the remaining 15 the diagnosis of gastric or duodenal ulceration was made on barium meal. This figure (21.1%) is remarkably similar to that recently reported by Jones *et al.*¹ in patients with abdominal aneurysm (22.6%). They studied postmortem reports of patients with aneurysm while we studied inpatient records; our methods are more likely to underestimate the true incidence of peptic ulceration, and it may be therefore that the association between occlusive arterial disease and peptic ulceration is even greater than that with abdominal aneurysm. In any case, in both conditions the incidence of peptic ulcerations seems significantly higher than in a comparable section of the general population (7%). The practical implication of this association seems to belong to the time immediately after an arterial operation, when exacerbation of a chronic ulcer may lead to complications. It may influence also the decision to use anti-coagulants.

It would be interesting to speculate on the significance of this association, but in this brief communication we shall refrain and state only that it remains unexplained. We are presently carrying out an analysis of our cases and we hope to report and discuss our findings more fully in the future.—We are, etc.,

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¹ Jones, A. W., Kirk, R. S., and Bloor, K., *Gut*, 1970, 11, 679.

Theatre Fire

SIR,—Recently a fire occurred during surgery under general anaesthesia when no explosive gases were involved. This accident has shown that what until now was considered a perfectly safe procedure entails a remote risk of fire, and in reporting it I seek to bring to the attention of surgeons and anaesthetists the fact that a procedure which has been used without mishap many thousands of times has, once in the U.S.A. and once in this country, resulted in fire.

A rodent ulcer on the left upper lid of a

20-year-old man was to be removed. Since intubation was impossible an airway had been inserted, which was held in place by adhesive plaster. The airway was connected to an expiratory valve, and a length of rubber tubing led beneath the drapes to the anaesthetic machine. The patient was breathing a mixture of nitrous oxide (3 l./min.), oxygen (5 l./min.), and halothane 4%.

"Towelling-up" consisted of covering the face with a polyester foam drape in which an opening had been cut to leave the operation site free. Placed over this was a paper sheet, some 2 ft (52 cm) square, and over all, a blue cotton drape covered the entire body. A head-band ensured that all the drapes were held close to the scalp.

The lesion was excised and control of the bleeding started. But as soon as the contact button on the hand cautery was touched, the whole area became instantaneously engulfed in flames. Though the drapes were immediately ripped off, and the fire put out, the patient suffered burns to his face and neck.

It was found impossible to ignite the polyester foam by touching it with a hot cautery, either in air or in an oxygen-enriched atmosphere. If, however, there was a "primer" in the form of a hair or a wisp from a cotton gauze swab, then ignition was immediate if in an oxygen-laden environment.

The similarities to an earlier report¹ are remarkable. In that instance, a rodent ulcer was being removed from a lower lid under local anaesthesia. To assist the patient, a tube from an oxygen cylinder was held to the cheek with adhesive tape. As soon as the cautery was used, fire broke out.

A fire in an atmosphere of oxygen has to be seen to be believed. The flames do not spread as in a conventional fire, but rather the whole area becomes a mass of flames instantaneously.

The method of towelling-up, as we have described, which was our routine at the time, presumably allowed gases from the exhaust-valve, which was beneath the drapes, to be channelled up to the polyester foam, and so out through the opening in it. This foam is porous and multicellular, and can hold gases; it is thus a material which, once ignited, will burn with great rapidity.

In the light of this experience I should like to make these recommendations:

- (1) Polyester foam should not be used as a drape, but a thin, flexible, impervious material should be sought as a substitute.
- (2) Where possible, exhaust-valves should not be sited beneath the drapes.
- (3) As low a temperature as is compatible with surgical needs should be used on the cautery since this will minimize the risk of ignition.

I would like to thank the consultant staff of Moorfields Eye Hospital for encouraging me to report this case.

—I am, etc.,

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¹ Magruder, G. B., and Gruber, D., *Archives of Ophthalmology*, 1970, 84, 237.

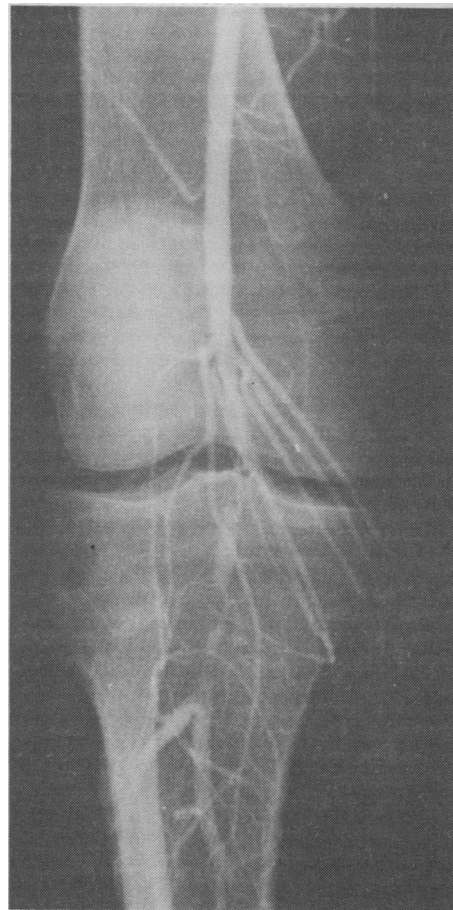
Cystic Degeneration of the Popliteal Artery in a Female

SIR,—Although some 40 cases of cystic degeneration of the popliteal artery have been reported to date (19 December 1970, p. 69)

only five cases have been described in women.¹ A sixth case is now reported.

A 32-year-old housewife presented in December 1968 with a two-month history of intermittent claudication in the right leg. She also complained of increasing coldness of the right foot after exercise.

On examination the right foot was cooler than the left. The popliteal and pedal pulses were absent on that side although the femoral pulse was readily palpable. Otherwise clinical examination was negative. Femoral arteriography showed several smooth occlusions of the popliteal artery (Fig.)



At operation a segment of the popliteal artery approximately 5 cm long was found to be swollen and beaded in appearance. It was non-pulsatile. On incision of the adventitia clear jelly-like material escaped under tension from within the layers of the vessel wall. The arteriotomy was completed and no evidence of thrombotic occlusion or atheroma was found. A Fogarty catheter was passed upwards and downwards along the vessel in order to ensure that a thrombus had not been overlooked. The arterial incision was closed with a continuous everting suture. Good pulsation was observed and operative arteriography showed the popliteal artery to be patent without significant narrowing. The postoperative recovery was uneventful and she was discharged 12 days after operation. Pathological examination of the cystic material showed it to be amorphous mucus.

At review in May 1969 she was symptom-free, but subsequently she noticed tightness of the calf of her leg if she walked quickly. When seen in January 1971 this symptom

was present but caused her little inconvenience. Repeat arteriography showed occlusion of the whole of the popliteal artery with well marked collaterals. She refused further operation in view of the paucity of her symptoms.

Occlusion of the artery was due to contact between the intimal surfaces of the vessel without thrombosis. Conservative removal of the gel restored pulsation, and patency of the artery was demonstrated arteriographically following the operation. However, re-occlusion occurred within one year, and this supports the opinion that in cases of complete occlusion arterial resection with autogenous vein grafting should be performed in preference to simple evacuation of the cyst.—I am, etc.,

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- ¹ Haid, S. P., Conn, J. Jun., and Bergan, J. J., *Archives of Surgery*, 1970, 101, 765.
² Lewis, G. J. T., Douglas, D. M., Reid, W., and Watt, J. K., *British Medical Journal*, 1967, 3, 411.

Lymphocyte Sensitivity in Cancer

SIR,—Cellular electrophoresis has recently been applied by other workers in this unit to demonstrate lymphocyte sensitivity in cancer patients to a basic protein isolated from nervous tissue (encephalogenetic factor—E.F.)¹ and similarly derived extracts of tumour tissue (12 June, p. 613). Changes in electrophoretic mobility of irradiated guinea-pig macrophages that had been incubated with human lymphocytes and putative antigen were measured in a cytopherometer. The test probably depends on alterations in surface charge induced by non-antibody soluble proteins (lymphokines)—perhaps macrophage migration inhibition factor (M.I.F.)—released by human lymphocytes after interaction with specific antigen. Unfortunately the cytopherometer is capricious and consequently the more widely used macrophage migration inhibition (M.M.I.) test, which has given results parallel to the cytopherometer in a known delayed hypersensitivity condition,² would perhaps afford a technically simpler detection of lymphokine production.

Considerable experience of the M.M.I. test has been acquired in this unit,^{2,3} while a recent modification enables the use in one experiment of 300 or more microcapillaries. Thus 30-40 degrees of freedom are available in making a statistical evaluation of results so that migration inhibitions of about 10% become highly significant.

Peripheral blood lymphocytes, purified by a methyl cellulose carbonyl iron method,⁴ from a group of patients that included three neurological and 12 carcinoma cases were tested by M.M.I. in parallel with the cytopherometric method. Migration chambers were prepared as described elsewhere³ with capillaries containing a mixture of 5% human lymphocytes in guinea-pig peritoneal exudate cells.⁵ Migration inhibition due to addition of 33 µg/ml of basic protein to the nutrient medium (20% pooled normal guinea-pig serum in 199) was measured after 16 hours' incubation. A mixed lymphocyte reaction (mean migration=87.0%; S.D. 15.6; n=34) was partially eliminated by 100 r irradiation¹ of the guinea-pig cells. Results are set out in the Table.

	No. of Patients	Significant Inhibition P<.01	Not Significant
(a) Using Nervous Tissue Basic Protein (EF):			
Carcinoma	12	2*	10*
Neurological disease	3	0	3*
Sarcoidosis	1	1*	0
Control (autologous guinea-pig lymphocytes)	3	0	3
(b) Using Tumour Tissue Basic Protein:			
Carcinoma	4	4*	0
Neurological disease	3	2*	1*
Control (autologous guinea-pig lymphocytes)	3	2	1

*Lymphocytes tested by the cytopherometric method gave positive results in all cases, P<.001 (12 June, p. 613).

The M.M.I. test indicated significant inhibition with E.F. in only three of 16 cases (mean migration 96.6%; S.D.=10.7; n=16) which the cytopherometric method showed to possess highly significant sensitivity. Probable cytotoxicity of the tumour tissue extract evidenced by inhibition of control cells (mean migration 88.5%; S.D. 3.5; n=3) invalidated the stronger inhibitions (though not significantly different, P=0.4-0.3) obtaining with four carcinoma and two of the neurological cases in the experimental group (mean migration=76.7%; S.D.=10.7; n=7).

This preliminary study has shown that a modified M.M.I. test, employing human lymphocyte and guinea-pig peritoneal exudate cell mixtures of greatly enhanced sensitivity and reproducibility, failed to detect the lymphocyte sensitization to E.F. previously revealed using the cytopherometer. However, it is possible that further tumour antigen isolates may be less toxic in the M.M.I. test and yield specific inhibition.

The unquestionable superior sensitivity of the cytopherometric method may relate to

an essential difference between two methods both making use of biological amplification (through lymphokines acting on normal macrophage indicator cells) of a small initial specific cellular immune response. Lower levels of lymphokine may be required to produce measurable reduction of an artificially induced electrophoretic mobility in the cytopherometer than to effect the biological interaction responsible for inhibition of active migration in the M.M.I. test.

—We are, etc.,

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- ¹ Field, E. J., and Caspary, E. A., *Lancet*, 1970, 2, 1377.
² Hughes, D., Caspary, E. A., and Field, E. J., *Zeitschrift für Immunität und Allergieforschung*, 1970, 141, 14.
³ Hughes, D., and Newman, S. E., *International Archives of Allergy and Applied Immunology*, 1968, 34, 237.
⁴ Hughes, D., and Caspary, E. A., *International Archives of Allergy and Applied Immunology*, 1970, 37, 506.
⁵ Rajapakse, D. A., and Glynn, L. E., *Nature*, 1970, 226, 857.

Adaptation of Houses for Home Dialysis

SIR,—The article "Some Administrative Problems in Adaptation of Houses for Home Dialysis" (12 June, p. 637) performs a useful service in bringing to light sources of unreasonable delay experienced in completing home adaptation for renal dialysis patients.

Our experience in this department is that where the adaptation of an existing room is satisfactory this can be completed within three to six weeks of the case being brought to the attention of the Health Department, and always before the patient is ready for home dialysis. We are fortunate in two respects. Firstly, at the time when our first case was in hand, the health committee authorized the medical officer of health to deal with cases as they arise, thus avoiding the delay consequent upon the need to obtain committee sanction for individual cases. Secondly, the repairs section of the City Housing Department has carried out the structural alterations for us in each case and has done so skilfully, economically,

and, above all, with a sense of urgency. A representative of the repairs section is always present at the initial site meeting.

The Health Department's assessment officer also attends the site meeting and, in the knowledge of the rough estimate of cost arrived at there, explains in detail the basis on which the patient's contribution to the cost will be assessed. No difficulty has been experienced in this connexion.

There have been three cases in which room adaptation was not practicable and in each case rehousing was recommended. In the event, one case was dealt with by renal transplant, but the other two were transferred to suitable municipal tenancies within four and five weeks. I suggest that in many instances where room adaptation is not possible rehousing in more suitable accommodation may be the speediest course.—I am, etc.,

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Chloroquine Myopathy

SIR,—Your recent leading article (12 June, p. 605) on chloroquine myopathy was timely in view of the extensive use of this drug in malaria and rheumatoid arthritis. However, the suggestion that only large doses lead to toxic symptoms may give rise to a spurious confidence when prescribing this drug in

small doses for long periods of time.

A patient with rheumatoid arthritis was known to have taken only one 250 mg tablet chloroquine daily for 18 months before she developed severe muscle weakness of both legs together with progressive macular blindness.¹ A biopsy of the left tibialis