indicated by the marker (fig (a)). The upper level at which the short saphenous vein was palpated was over the femoral condyles and the vein continued several centimetres higher before joining the popliteal vein. By using positive intrathoracic pressure the junction was shown more clearly and valves were demonstrated in the popliteal vein. Sometimes the short saphenous vein continued into the thigh and there was only a very small communicating vein joining the popliteal vein (fig (b)). These high short saphenous veins commonly joined the long saphenous vein via the posteromedial tributary. Occasionally the short saphenous vein communicated with tributaries of the internal iliac vein at the upper thigh, and in one case the proximal communication was with the deep femoral vein.

Comment

The clear definition of the termination of the short saphenous vein made surgery simple and the sapheno-popliteal junction was easily located through a small transverse incision. Operations on recurrent short saphenous veins were simplified by the radiographic demonstration of the anatomy. The junction was often higher than clinically demonstrated and the peroperative venogram was particularly helpful when dealing with an atypical or recurrent vein.

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Treatment of severe hypertension with chlorpromazine and frusemide

Rapid reduction of blood pressure in severe hypertension has recently been the subject of controversy because cerebrovascular or coronary insufficiency are occasional complications.¹ Nevertheless, it is generally agreed that it is still appropriate treatment for severe hypertension associated with encephalopathy, cerebrovascular accident, cardiac failure, aortic dissection, subarachnoid haemorrhage, prolonged epistaxis, or eclampsia.² But all methods hitherto described are restricted in application by their complexity or their adverse effects. Hence there is scope for an effective alternative that does not have these limitations. Chlorpromazine is a major tranquilliser with a complex action on the cardiovascular system resulting in hypotension.³ Frusemide, a loop diuretic, has an initial acute volume-depleting effect on the circulation.³ That these drugs in combination reduce severely raised blood pressure satisfactorily and safely does not seem to have been recorded. We report a prospective study of the use of this regimen in nine cases.

Patients, methods, and results

We studied all patients aged under 70 years admitted to our unit with severe hypertension ($\geq 210/130$ mm Hg supine after over one hour's bed rest) during one year. There were five men and four women with a mean age of 53 years (range 43-61). Presenting features were cerebrovascular episodes (3), left ventricular failure (2), uncontrolled epistaxis (1), myocardial ischaemia (1), headaches (2), and uncontrolled hypertension (2). The electrocardiograms of eight patients fulfilled the voltage criteria for left ventricular hypertrophy, seven having associated ST/T wave changes ("strain pattern"). The electrocardiogram of the ninth showed changes of myocardial ischaemia. In seven the cardiothoracic ratio was >0.5 . Grade IV hypertensive retinopathy was present in two, grade III in two, and grade II in four. Creatinine clearance was >100 ml/min in four and <60 ml/min in the remainder (mean 36, range 15-53 ml/min). Three patients had been taking antihypertensive drugs before admission.

Treatment was with 50 mg chlorpromazine intramuscularly, 50 mg frusemide intravenously, and bedrest. In one case the combination was repeated after three hours (initial blood pressure 300/150 mm Hg). Maintenance oral treatment with a diuretic and beta-blocker was begun from four to eight hours after parenteral treatment. Pulse rate and blood pressure (right arm supine, mercury sphygmomanometer) were recorded hourly for four hours and four-hourly thereafter. A gradual and adequate reduction in blood pressure and pulse rate resulted in every case (figure). Mean arterial pressure fell by an average of 79 mm Hg (42% of initial value, range 31-50%). There were no side effects.

Effect of chlorpromazine 50 mg intramuscularly and frusemide 50 mg intravenously on supine systolic blood pressure (●), diastolic blood pressure (○), and pulse rate (■) in nine patients with severe hypertension, showing mean values and range during 24 hours after administration. Oral maintenance treatment was begun 4 to 8 hours after parenteral therapy.

Comment

This method commends itself to routine use for the following reasons. It is simple to administer, unlike continuous intravenous infusions of nitroprusside or labetalol. The rate of action is gradual and predictable compared with the variable and precipitate hypotension induced by diazoxide or hydralazine, and in contrast to these there is no reflex tachycardia. While being slightly more effective than oral labetalol,⁴ unlike this drug it is not contraindicated in cardiac failure or asthma and a pressor response has not been observed. The only caveat applies uniformly to all methods of rapidly lowering blood pressure—namely, the risk of inducing cerebral or myocardial infarction, especially the former. In our series, however, the maximum fall in mean arterial pressure was considerably less than that at which cerebral hypoperfusion has been shown to lead to cerebral ischaemia and a risk of permanent neurological deficit.¹

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