Renal venous renin concentrations before and after 200 mg of intravenous diazoxide, before and 25 days after repair of the ligated ureter. Renin expressed as ng/ml/min.

	Obstructed ureter		After obstruction	
	Before diazoxide	After diazoxide	Before diazoxide	After diazoxide
Right renal venous renin ..	2.1	5.0	0.9	1.1
Left renal venous renin ..	4.7	10.6	0.9	1.0
Ratio of left: right ..	2.23	2.12	1.0	0.9

hypertension and raised renin concentration fell to normal in four days. This rapid return to normal of the blood pressure and renin is in contrast to the course in our patient, who remained hypertensive despite a shorter period of ureteric obstruction. Perhaps short-lasting renal disturbance in our patient was able to maintain the hypertension independent of the renin-angiotensin axis by failing to remove a naturally occurring pressor substance. Alternatively, the raised blood pressure may have been mediated by a resetting of the peripheral resistance.

Accidental ureteric ligation occurs infrequently, but it represents a curable cause of hypertension and may give some insight into hypertensive mechanisms other than those immediately mediated by the renin-angiotensin system.

We thank Dr M J Imrie, consultant radiologist, for the renal venous blood sampling.

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Ischaemic colitis and drug abuse

The term ischaemic colitis embraces a wide spectrum of ischaemic damage to the colon ranging from mucosal necrosis, which is a reversible lesion, to full thickness infarction of the bowel wall. The disorder characteristically occurs in elderly patients with pre-existing chronic cardiovascular disease and is not associated with occlusion of the mesenteric vessels.¹ We describe a healthy young man who developed ischaemic colitis following an intravenous injection of Diconal (dipipanone hydrochloride and cyclizine hydrochloride).

Case report

A 25-year-old man was admitted as a surgical emergency with abdominal pain. For several years he had used a wide variety of drugs but was not addicted to any of them. The evening before his admission he consumed six pints (3 litres) of beer, and then injected himself intravenously with three Diconal tablets dissolved in tap water. He promptly fell asleep and four hours later awoke, vomited, and continued to retch for a further hour. He then developed central abdominal pain, which steadily increased in intensity and precipitated his admission. On examination, 10 hours after the injection of Diconal, he was in considerable pain, sweaty and pale, with a blood pressure of 100/60 and a pulse rate of 108/min. His temperature was normal. There was generalised tenderness and guarding over the abdomen with maximal tenderness in the right iliac fossa. Investigations showed a moderate leucocytosis and there were fluid levels on the straight abdominal x-ray films.

At laparotomy the caecum was gangrenous, though not perforated, and there was oedema and patchy infarction of the ascending colon and hepatic flexure. The related mesenteric vessels were pulsating as far as the bowel

Right hemicolectomy specimen showing haemorrhagic necrosis of the mucosa with submucosal oedema (arrow) and gangrene of the caecum.

wall. A right hemicolectomy was performed, and the transverse colon was brought out as a mucous fistula with the formation of a proximal ileostomy. Blood cultures were taken and the patient was started on intravenous gentamicin and lincomycin. Continuity of the bowel was restored about three weeks later after an uneventful postoperative recovery, and the patient was discharged after a further 10 days.

Pathological examination of the right hemicolectomy specimen (figure) showed haemorrhage and necrosis of the colonic mucosa with definite submucosal oedema. The caecum was paper thin and gangrenous. The process extended from the terminal 3 cm of ileum to the hepatic flexure and was most definite along the mesenteric border. Microscopically, full thickness infarction of the caecum was confirmed, and elsewhere there was haemorrhagic necrosis of the mucosa with appreciable submucosal congestion and oedema together with mild acute inflammation. An occasional thrombus was present in small submucosal veins but the mesenteric vessels were otherwise normal.

Discussion

The macroscopic and microscopic appearances of the resected bowel are characteristic of ischaemic colitis associated with non-occlusive mesenteric ischaemia.¹ This type of ischaemic colitis usually occurs in elderly patients with organic heart disease and is precipitated by a hypotensive episode. We can find three reports of intestinal ischaemia occurring in healthy young adults, all after hypotension.²⁻⁵ In each case hypotension was due to haemorrhage after severe trauma and in two of the cases the small intestine was affected.^{3,4} The distribution and nature of the colonic lesion in the other case⁵ were identical to our case. Although the patient we describe was not hypotensive when seen, conceivably hypotension could have occurred earlier when he was asleep. Intravenous injection of Diconal, each tablet of which contains 10 mg of dipipanone hydrochloride and 30 mg of cyclizine hydrochloride, causes hypotension² and this effect may be potentiated by alcohol. Intestinal ischaemia is clearly a very rare complication of hypotension in otherwise healthy young adults. Conceivably colonic distension, after heavy beer consumption, could have been a pre-disposing factor in this patient since raised intraluminal pressure of the intestine causes decreased intestinal blood flow.¹

Non-occlusive intestinal ischaemia should be considered in patients who have abdominal pain after a hypotensive episode.

We are grateful to Mr F P McGinn for permission to present this case.

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