TABLE II—Details on duration of symptoms before operation, general condition of patient, state of bowel, and outcome

Case No	Duration of symptoms before operation (hours)	General condition	Extent of bowel affected; direction and degree of rotation	State of bowel	Outcome
1	22	Stable	Proximal jejunum to distal ileum; clockwise rotation through about 180°	Moderately distended, viable	Died suddenly 30 hours after operation
2	22	Stable	Distal half of small bowel, caecum, and proximal half of ascending colon; anticlockwise rotation through about 180°	Moderately distended, viable	Uneventful recovery
3	14	Stable	Distal half of small bowel; clockwise rotation through about 360°	Moderately distended, viable	Uneventful recovery
4	18	Stable	Distal half of small bowel; clockwise rotation through about 540°	Moderately distended, viable	Uneventful recovery
5	96 (Initially treated conservatively elsewhere)	Stable	Distal half of small bowel, caecum, and proximal half of ascending colon; clockwise rotation through about 180°	Moderately distended, viable	Uneventful recovery
6	13	Stable	Distal half of small bowel; anticlockwise rotation through about 360°	Moderately distended, viable	Uneventful recovery
7	96	Dehydrated	Middle half of small bowel; clockwise rotation through about 180°	Moderately distended, viable	Uneventful recovery
8	40	Stable	Distal half of small bowel, caecum, and proximal one-third of ascending colon; clockwise rotation through about 180°	Moderately distended, viable	Uneventful recovery
9	72	Circulatory collapse (shocked)	Proximal jejunum to distal ileum; anticlockwise rotation through about 540°	Non-viable, mesenteric cyst (12 cm × 9 cm) 90 cm distal to duodenal-jejunal flexure and adjacent to bowel	Died 12 hours after operation
10	18	Circulatory collapse (shocked)	Proximal jejunum to distal ileum; clockwise rotation through about 180°	Non-viable, gangrenous	Died 7 hours after operation
11	72	Dehydrated	Distal half of small bowel and caecum; anticlockwise rotation through about 180°	Moderately distended, viable	Cardiac arrest at operation, died 8 hours later
12	17	Stable	Distal half of small bowel; anticlockwise rotation through about 450°	Moderately distended, viable	Uneventful recovery

underway by gas-liquid chromatography but could not be completed.

Most studies now indicate that the small bowel is stimulated to greater motility by serotonin. Shepherd⁹ found local increase of the activity of an ileal loop when serotonin was injected into its supplying artery, and Fishlock and Parks¹⁰ showed that circular muscle strips from the ileum contract in the presence of serotonin. Free serotonin is, however, readily metabolised by intestinal enzymes, mainly monoamine oxidase. But when large amounts of beer, containing inordinately large amounts of serotonin, are drunk these enzymes are probably diluted to such an extent that appreciable amounts of serotonin are absorbed, thereby causing increased tone, contraction, and twisting of the bowel.

Further investigations are certainly warranted, but the present findings indicate that volvulus of the small bowel in this series was related to the presence of serotonin in the kongo beer. It is therefore reasonable to suggest, in the absence of any other known factor, that the large amount of serotonin in the beer, which was drunk mostly in large quantities, caused volvulus of the small bowel in at least three-quarters of these patients.

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SHORT REPORTS

Rebound hypertension after acute methyldopa withdrawal

Although clonidine has been known to cause rebound hypertension on withdrawal¹ there are no cases reported of this occurring with methyldopa. We report such a case.

Case report

A 65-year-old man was incidentally found to have hypertension (180/110 mm Hg on three occasions) by his general practitioner. He was started on methyldopa, gradually increasing to a total daily dose of 1.5 g with control

of his blood pressure (140-160/80-100 mm Hg). Six months later he was admitted to hospital with nausea, headaches, nervousness, and giddiness. He reported that he had omitted his methyldopa for 48 hours; also that he had acted similarly in the past, but then when he became anxious, nervous, and nauseated he restarted his treatment and these symptoms disappeared.

Physical examination showed a well-covered countryman with a blood pressure of 300/170 mm Hg, pulse 120/min. Fundoscopy showed no papilloedema, haemorrhages, or exudates, just considerable arteriovenous nipping. Examination of the central nervous system showed nystagmus and other systems were unremarkable. Electrocardiograms showed left ventricular hypertrophy; there was no proteinuria; creatinine clearance was 78 ml/min and urinary vanillylmandelic acid excretion was not in excess.

Treatment with diazoxide bolus (300 mg intravenously) and methyldopa 250 mg thrice daily together with propranolol 40 mg thrice daily produced a well-controlled blood pressure (140-160/80-100 mm Hg) both lying and standing. Two months later his blood pressure remained controlled but he still had residual nystagmus.

Discussion

We suggest that this man's acute rise in blood pressure was the result of his stopping methyl dopa, which probably resulted in infarction of the medial longitudinal bundle. Supporting this supposition was his description of symptoms during times when he had previously stopped his treatment which were similar to those reported on clonidine withdrawal. We believe this case to be important because previously rebound hypertension has been reported only with clonidine. Possibly rebound hypertension is a more general property of hypotensive agents.

¹ Hokfelt, B, Hedeland, H S, and Dymling, F, *European Journal of Pharmacology*, 1970, **10**, 389.

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Regular aspirin use and myocardial infarction

We have reported a negative association between regular aspirin intake and the risk of acute myocardial infarction (AMI)¹ based on a case-control study as part of a continuing programme of intensive drug monitoring. In that study three out of 325 patients with AMI (0.9%) had a history of regular aspirin use before admission compared with 188 out of 3807 controls (4.9%). Since that report data on additional patients have been accumulated, and we now re-examine the relationship of AMI to regular aspirin use in the light of all the data now available.

Patients, methods, and results

Information on "regular" drug intake for the month before admission was obtained from all patients enrolled in the programme, and final diagnoses were abstracted at the time of discharge. Further details of the programme can be found in our previous report.¹

As in our previous study,¹ we have excluded from the final analyses patients below 40 or above 69 years of age and those whose first listed diagnosis was a condition likely to be associated with aspirin use. The final analyses were based on a total of 658 patients with a discharge diagnosis of AMI and 7496 controls admitted to selected medical services of the hospitals monitored.

The combined data for the previously reported and the new series, covering 325 and 333 cases of AMI respectively, are given in the table. Six out of 658 (0.9%) of the patients and 374 out of 7496 (5.0%) controls took aspirin regularly. The estimated AMI rate ratio at this level was therefore 0.18 for regular aspirin users compared with controls. Taking into account region (North America v Israel, New Zealand, or Scotland), sex, and age, the rate ratio estimate² then became 0.23, with a 95% confidence interval ranging from 0.11 to 0.48.

The incidence of aspirin use among AMI patients and controls with diabetes was 2.1% (2/96) and 4.1% (48/1171) respectively; among people with hypertension 1.6% (1/64) and 3.9% (45/1103) respectively; and among those with a secondary diagnosis of arthritis 0% (0/16) and 18.6% (36/194) respectively.

Discussion

The present updating of the findings of the Boston Collaborative Drug Surveillance Program confirms the previous indication of a negative association between regular aspirin use and the risk of AMI, as the new data conform very closely with those previously reported.¹

We are unaware of any special problems with the data or the analysis. Regular use of aspirin in itself is unlikely to influence the possibility of admission to hospital in people with AMI or in those with illnesses diagnosed in the comparison series. Our data on aspirin use does not appear to be biased and we can think of no other factors

History of regular aspirin use among patients with acute myocardial infarction (AMI) and controls according to geographical region, sex, and age. Evaluation of AMI rate ratio (RR) for aspirin users relative to non-users is also shown

Sex	Age (years)	Patients with AMI			Controls			
		Regular aspirin use			Regular aspirin use			
		Yes	No	Total	Yes	No	Total	
North America								
Men	{	40-49	1	48	49	42	891	933
		50-59	0	77	77	65	1079	1144
		60-69	1	95	96	66	980	1046
Women	{	40-49	0	10	10	39	549	588
		50-59	0	21	21	51	687	738
		60-69	1	44	45	55	697	752
Other areas								
Men	{	40-49	2	50	52	6	269	275
		50-59	0	78	78	6	362	368
		60-69	0	127	127	7	501	508
Women	{	40-49	1	13	14	13	271	284
		50-59	0	35	35	13	385	398
		60-69	0	54	54	11	451	462
Total			6 (·9%)	652	658	374 (5%)	7122	7496

Crude RR: point estimate¹ 0.18; 95% confidence limits³ 0.09, 0.36; test statistic $\chi^2 = -4.76$; $P < 0.00005$.

Residual RR: point estimate⁴ 0.23; 95% confidence limits³ 0.11, 0.48; test statistic $\chi^2 = -3.89$; $P = 0.0001$, 2-sided.

that might influence the association sufficiently to explain them. Some support for causal interpretation is provided by the experimental data of Elwood *et al.*³ On the other hand, an acute experiment on the elderly⁴ gave no evidence of a preventive effect of aspirin in thrombosis-related illnesses, and a large non-experimental study indicated no association between using aspirin "often" and the risk of AMI.⁵

Our data continue to be provocative, and it would be premature to conclude that regular aspirin use prevents non-fatal AMI or other cardiovascular disease. Nevertheless, this evidence, together with the documented effect of aspirin in reducing platelet adhesiveness, calls for further evaluation of aspirin as a potential preventive agent for thrombotic disease.

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¹ Boston Collaborative Drug Surveillance Program, *British Medical Journal*, 1974, **1**, 440.

² Mantel, N, and Haenszel, W, *Journal of the National Cancer Institute*, 1959, **22**, 719.

³ Elwood, P C, *et al*, *British Medical Journal*, 1974, **1**, 436.

⁴ Heikinheimo, R, and Jarvinen, K, *Journal of the American Geriatrics Society*, 1971, **19**, 403.

⁵ Hammond, E C, and Garfinkel, L, *British Medical Journal*, 1975, **2**, 269.

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