Buscopan or glucagon for endoscopic cannulation of ampulla of Vater?1

B F Hannigan MRCP A T R Axon MD MRCP2
S Avery SRN R P H Thompson DM FRCP
Gastrointestinal Laboratory, Rayne Institute, St Thomas’ Hospital, London SE1 7EH

Summary: The number of intravenous injections of hyoscine-N-butylbromide (Buscopan) or glucagon required to maintain relaxation of the duodenum during endoscopic retrograde cholangiopancreatography (ERCP) were compared in a double blind trial of 55 patients. There was no significant difference in the number of injections. Serum amylase levels after the use of both relaxants were compared in 50 patients undergoing ERCP. No significant difference in the levels of hyperamylasaemia were found.

Introduction
In the United Kingdom both Buscopan (hyoscine-N-butylbromide) and glucagon are commonly used to relax the duodenum when attempting cannulation of the ampulla of Vater during endoscopic retrograde cholangiopancreatography (ERCP) (Cotton 1977). Buscopan is not available in the United States of America. It was our impression that glucagon was more effective than Buscopan, and so these two drugs have been compared in a double-blind trial to determine whether there was a difference in the efficiency of this relaxation. This was done by recording the number of injections required to maintain adequate relaxation throughout the procedure.

Secondly, since hyperamylasaemia, and uncommonly clinical pancreatitis, follow injection of contrast medium into the pancreatic duct (Bilbao et al. 1976) and since glucagon has been used to treat pancreatitis (Condon et al. 1973), the degree and frequency of hyperamylasaemia after using these two relaxants during cannulation have also been compared.

Methods
All patients received intramuscular or intravenous atropine 1.0 mg and pethidine 50–100 mg, and then 5–20 mg diazepam intravenously. Buscopan 40 mg or glucagon 1 mg was given intravenously and repeated if necessary to maintain duodenal relaxation, the operator not knowing which drug was being used. Cannulation was carried out using an Olympus JFB or JFB2 duodenoscope, and Urografin 290 was the contrast medium. Serum amylase levels in venous blood (normal range 70–300 units/litre) were compared immediately before and immediately after the procedure, and at 3–6 hours and 15–18 hours after the procedure. The results were compared by Student’s unpaired t test.

Results
There were 56 examinations in 55 patients. In 7 examinations neither duct system was opacified (Buscopan 4; glucagon 3); in 24 both ducts were opacified; in 13 the bile duct alone (Buscopan 8; glucagon 5), and in 12 the pancreatic duct alone (Buscopan 5; glucagon 7).

Glucagon was used in 26 patients and Buscopan in 30. There was no difference in the frequency of administration, glucagon being given 1.65 times and Buscopan 1.80 times (ranges 1–3).

1 Accepted 9 October 1981
2 Present address: Leeds General Infirmary, Leeds LS1 3EX
Reprint requests to R P H Thompson

© 1982 The Royal Society of Medicine
Amylase levels were measured in 50 patients. When neither duct was opacified the serum amylase levels did not rise. In the patients in whom the bile duct alone was opacified there was a mean rise in serum amylase of 105 ± 196 (mean ± s.d.) units when using glucagon and 76 ± 156 units when using Buscopan (NS).

When the pancreatic duct was opacified with or without the bile duct, peak amylase levels were higher. In the 17 receiving glucagon the mean rise of amylase was 327 ± 376 and in the 17 receiving Buscopan 374 ± 452 units (NS).

In 14 patients values greater than 1000 units were recorded; in 13 the pancreatic duct had been opacified. In 7 of these the level before the procedure was already elevated. Although 3 had pancreatic disease, one only had cirrhosis of the liver and in one both systems were normal.

Discussion
Objective assessment of the efficacy of a drug in relaxing the duodenum is difficult, so both drugs were administered in a blind manner and further injections were given when indicated. In the doses used the drugs proved equally effective in reducing the movement of the duodenum during endoscopy, and there was no evidence that one drug favoured successful opacification of the ducts.

Hyperamylasaemia, in contrast to clinical pancreatitis, was frequent after the use of either agent, especially when the pancreatic duct was opacified. The isoamylase causing this is known to be of pancreatic origin (Skude et al. 1976). The significance of this biochemical abnormality is unknown, although pancreatitis occasionally occurs after ERCP. There is evidence that glucagon has a beneficial effect in acute pancreatitis, but recent studies have failed to confirm this (Durr et al. 1978). Like Koch et al. (1975), we were not able to demonstrate significant reduction of the degree of elevation of amylase levels by glucagon, but this may be because hyperamylasaemia after ERCP is probably not related to pancreatic secretion. Since glucagon is much more expensive than Buscopan (£3.11 v. £0.36 at the doses used) there seems no justification for its use during ERCP. Although many operators now give a smaller dose of glucagon (0.25 mg), there is no smaller size of ampoule, so the cost of administering the drug is unlikely to be less.

References