

Clinical Reports

BURNELL R. BROWN, JR., M.D., PH.D., *Editor*

Anesthesiology
48:437, 1978

Naloxone Reversal of Choledochoduodenal Sphincter Spasm Associated with Narcotic Administration

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Narcotics are known to cause spasm of the choledochoduodenal sphincter (sphincter of Oddi).¹ Contraction of this sphincter might impair passage of contrast medium from the common bile duct into the duodenum during operative cholangiography. This report describes the case of a patient who received narcotics for preanesthetic medication and anesthetic maintenance in which contrast medium for an operative cholangiogram passed into the duodenum only after naloxone administration.

REPORT OF A CASE

A 22-year-old, 65-kg woman was scheduled for elective cholecystectomy. Serum alkaline phosphatase, glutamic oxalacetic transaminase, amylase and total bilirubin were normal. Oral cholecystogram revealed numerous stones. Preanesthetic medication was with morphine, 10 mg, im and atropine, 0.4 mg, im. Anesthetic induction was with thiopental, 250 mg, followed by succinylcholine to facilitate tracheal intubation. Anesthetic maintenance included 60 per cent nitrous oxide in oxygen plus intermittent fentanyl administration. Metocurine was administered to produce skeletal muscle relaxation.

The gallbladder was easily removed and the common bile duct then cannulated with an 18-gauge Intracath catheter. Cholangiography revealed non-passage of contrast medium into the duodenum on both initial and 15-minute postinjection films. At this time a total of 0.55 mg fentanyl had been administered. Manual and probe examination showed that the common bile duct was free of stones. In view of the possible role of narcotics in producing spasm of the choledochoduodenal sphincter, it was elected to add enflurane (1–1.5 per cent, inspired) to the delivered gases and then administer naloxone 0.4 mg, iv. Five minutes after naloxone administration repeat cholangiography revealed passage of contrast medium into the duodenum.

DISCUSSION

Operative cholangiography is an accepted and integral part of operations on the biliary tract. Routine operative cholangiography has been advocated for all cholecystectomies because of the incidences of unsuspected common duct stones, which range from 2 to 4

per cent.² In addition to common bile duct obstruction from an unrecognized stone, the failure of passage of contrast medium into the duodenum may reflect spasm of the choledochoduodenal sphincter due to narcotics, operative manipulation of the common bile duct, or rapid injection of cold or irritating dye. For example, morphine (as little as 10 mg, subcutaneously), meperidine, codeine, and pentazocine produce sustained choledochal hypertension.¹ This may reflect a direct action of narcotics on the musculature of the choledochoduodenal sphincter. A recent study led to the conclusion that fentanyl may also produce sphincter spasm, as evidenced by failure of contrast medium to pass from the common bile duct into the duodenum.³ The passage of dye into the duodenum only after the administration of naloxone in the case described in this report lends additional support to the suggestion that fentanyl may produce sphincter spasm. Nevertheless, we cannot rule out an effect of the morphine-atropine preanesthetic medication on biliary tone. Biliary spasm is not a consistent effect of therapeutic doses of morphine, and some patients show no change in bile duct size or pressure. Furthermore, concomitant administration of atropine has been shown to attenuate morphine-induced sphincter spasm.⁴

We conclude that the role of narcotics in producing choledochoduodenal sphincter spasm should be considered in the interpretation of abnormal operative cholangiograms. Administration of naloxone may reverse narcotic-produced sphincter spasm and prevent unnecessary surgical exploration of the common bile duct.

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Received from the Department of Anesthesia, Indiana University School of Medicine, Indianapolis, Indiana 46202. Accepted for publication November 20, 1977.

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