



: (Magnetic resonance cholangiopancreatography; MRCP)  
 가  
 : CT  
 15 (0.04 mg/kg) MRCP  
 .3 가 ,  
 :  
 ,  
 ( $p < 0.05$ ). 12 (80.0%)  
 , 2 (13.3%) , 1 (6.6%)  
 3 , 1  
 : MRCP

(Magnetic resonance cholangi- (5), (6, 7) 가  
 opancreatography: MRCP) 가 (1). 가 MRCP  
 MRCP Silva (8) MRCP 가  
 (Endoscopic retrograde cholangio- (2). MRCP 가  
 pancreatography: ERCP) MRCP  
 MRCP  
 (3). ,  
 (3, 2004 10 2005 10  
 4). MRCP 15 (Computed  
 tomography: CT)  
 1 MRCP . 15  
 2 가 10 , 가 5 , 51.4  
 2006 8 12 2006 12 13

(17-76 ) . 3 0: , 1: ,  
 4 , 3 , 2: , 3:  
 3 , 2 , 2 , 1 . 가  
 1.5T (General 가  
 Electric Medical Systems, U.S.A.) 가 가  
 가  
 가  
 (single shot fast spin echo: SSFSE) 가  
 T2 가 1.50  
 (source image), (3-D projection image) . 1.50 가 가  
 가  
 3-5 mm 40 .  
 5 cm ,  
 15 9 MRCP 가  
 TR/TE 4,000/900 가  
 msec, (fields of view, FOV) 250 mm, 가  
 (matrix) 256 × 256, (slice thickness) 40 가  
 mm 4 mm 1 2 가 3  
 가  
 3-4 가  
 MRCP 3 가 가  
 1kg 0.04 mg 1-2 ,  
 15 MRCP  
 MRCP 2 가  
 MRCP paired t - test  
 2 test  
 가

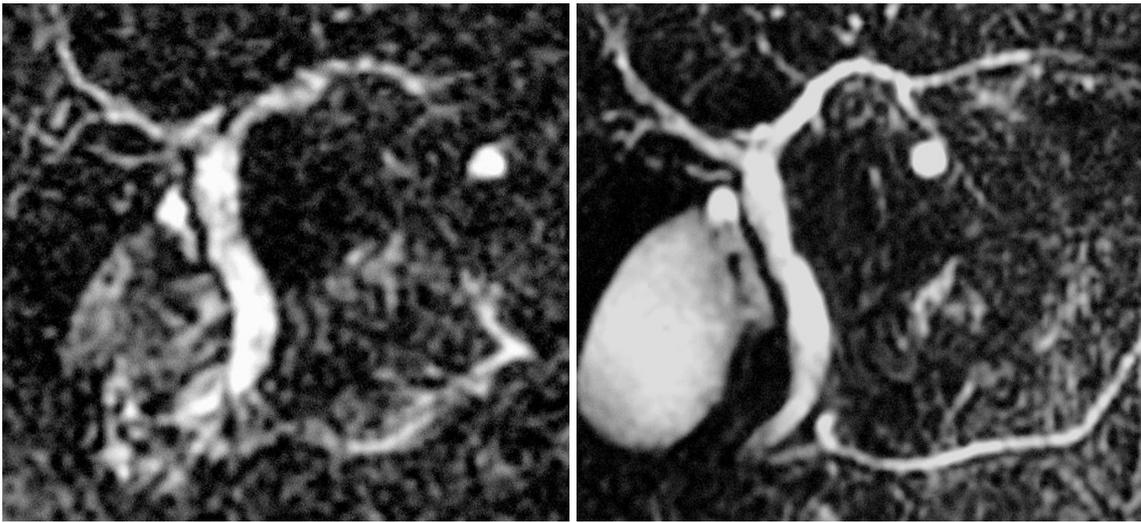
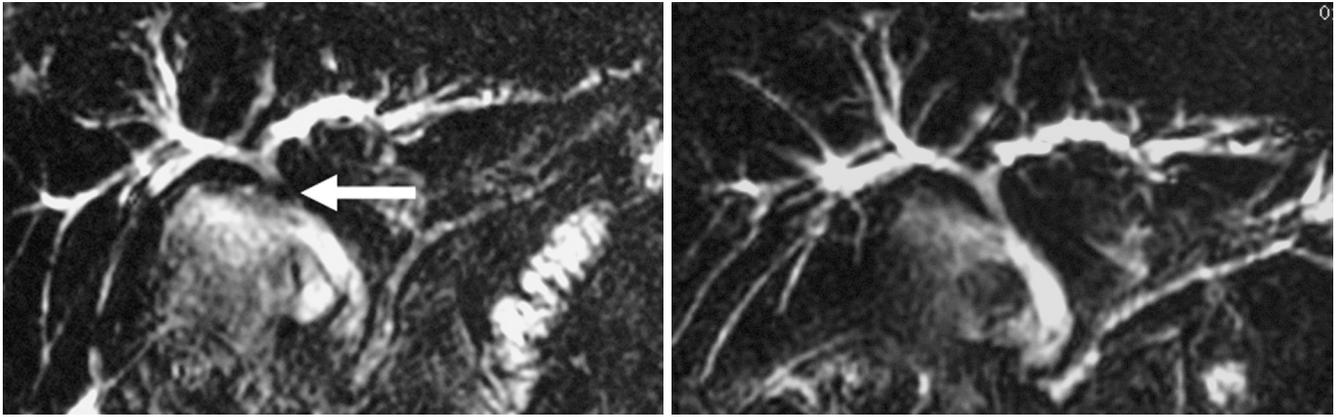


Fig. 1. MRCP image before (A) and after (B) morphine injection in a 71-year-old woman with acute pancreatitis. The image after morphine administration provides better qualities than the image before morphine administration for the visualization of the segmental intrahepatic bile duct, intrahepatic bile duct, common bile duct, cystic duct, and pancreatic duct.





**Fig. 3.** Patient with HCC. MRCP image before morphine injection (A) shows signal loss (arrow) at the proximal common hepatic duct, caused by pulsation from the adjacent hepatic artery. But MRCP image after morphine injection (B) shows improved distention in the duct.

35 - 69%

Yamashita (6) HASTE 2 HASTE

54%, HASTE

35% Soto (13)

69%

40.0%

Yamashita 73.3%

MRCP

(susceptibility artifact) (3),

ERCP (14)

가 MRCP

가 MRCP

가 Watanabe

(15) 가

MRCP 2

1

1

2

ERCP

가

secretin

(9, 12). Secretin

1

2

secretin

가

MRCP

가

가

가

MRCP

## MRCP기

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## Usefulness of MR Cholangiopancreatography after Intravenous Morphine Administration<sup>1</sup>

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**Purpose:** We wanted to assess the usefulness of MRCP after intravenous morphine administration in the evaluation of the hepatopancreatic pancreatobiliary ductal system.

**Materials and Methods:** We studied 15 patients who were suspected of having disease of hepatopancreatic ductal system and they did not have any obstructive lesion on ultrasonography and/or CT. MRCP was acquired before and after morphine administration (0.04 mg/kg, intravenously). Three radiologists scored the quality of the images of the anatomic structures in the hepatopancreatic ductal system. We directly compared the quality of the images obtained with using the two methods and the improvement of the artifacts by pulsatile vascular compression.

**Results:** The MRCP images obtained after intravenous morphine administration were better than those obtained before morphine administration for visualizing the hepatopancreatic ductal system. On direct comparison, the MRCP images obtained after morphine administration were better in 12 cases, equivocal in two cases, and the images before morphine administration were better in only one case. In three patients, MRCP before morphine injection showed signal loss at the duct across the pulsatile hepatic artery. In two of three patients, MRCP after morphine injection showed no signal loss in this ductal area.

**Conclusion:** MRCP after intravenous morphine administration enables physicians to see the hepatopancreatic ductal system significantly better and the artifacts caused by pulsation of the hepatic artery can be avoided.

**Index words :** Bile ducts, anatomy

Magnetic resonance (MR), cholangiopancreatography

Magnetic resonance (MR), artifact

Bile ducts, radiography

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