

CT 1

CT  
26 CT  
23 CT  
(n=10) (n=16) (n=8) (n=15) CT  
(n=14, 54%),  
(n=12, 46%).  
14 11 (78.5%)  
12 10 (83%)  
(p<0.001)  
CA 19-9가 (p<0.001).  
가 (p >0.05).  
CT 가  
가

(1). ease 가 가  
(2-4). CT CT  
(5,6), 1993 1 1998 6  
245  
26 ( 15, 11, 42-71, 57.7)  
(n=10)  
(n=16) 1996 1  
1998 6 23 (  
8, 15, 32-62, 44.4)  
8 15

CT Hispeed advantage (GE medical system, Milwaukee, Wis, U.S.A.) Somatom plus-4 (Siemens, Erlangen, Germany)

(Barium sulfate; E-Z Cat; E-Z-Em, Westbury, NY, U.S.A.) 1 600 ml , 300ml

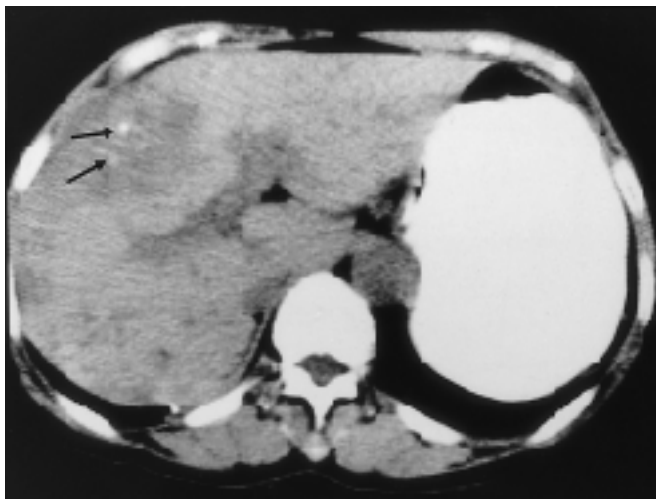
CT (Iopamidol, Iopamiron 300; Bracco, Milan, Italy) 100ml 120ml (Medrad, Pittsburg, Pa, U.S.A.) 2.5-3.0 ml/sec

CT (30-35 ), (65-70 ), (2-3 ) 5mm 7mm, 1.0-1.5 26 13 23 10mm 가

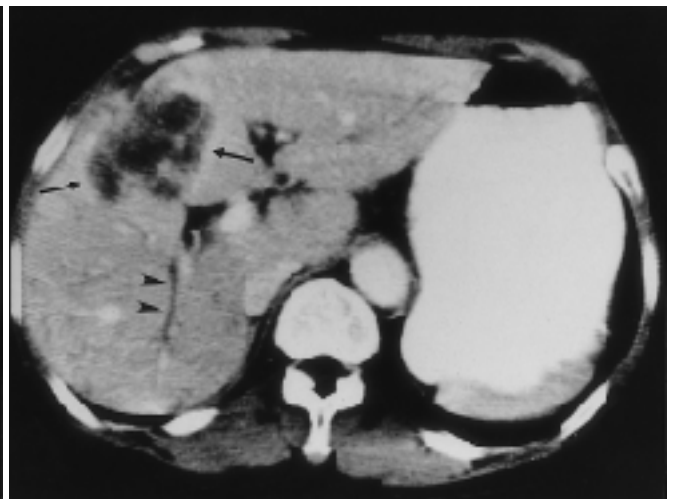
CT 가 CT 가 CT 12 8 (67%) (Fig. 2,3), 2 4mm 2 (Fig. 4).

student-t test

CT 26 14 (54%) , 12 (46%) , 14 CT 가 10 가 6 (60%), 가 4 (40%) , 가 가 가 8 가 2 (20%) (Fig. 1). CT 가 14 4 (28%) , 12 CT 12 8 (67%) (Fig. 2,3), 2 4mm 2 (Fig. 4). 14 11 (79%) (Fig. 1),



A



B

Fig. 1. A 65-year-old woman with cholangiocarcinoma associated with hepatolithiasis.

A. Unenhanced CT scan shows a hypo-attenuating hepatic mass containing focal hyperdense lesions (arrows) suggesting hepatolithiasis in the right lobe of the liver.

B. Contrast-enhanced CT shows a well-circumscribed hypo-attenuating mass with peripheral thin, smooth, rim-like enhancement in the same area (arrows). Note dilated bile ducts surrounding the mass and both intrahepatic ducts (arrowheads).

가  
3 (21%)  
10 (83%)  
(Fig. 2-4),  
(Table 1).  
2 (17%)  
26  
3 , 1  
6  
(Fig. 3),  
(Fig. 4).  
8  
3  
12 57.7 가 (p<0.001), 44.4 가  
가  
가 18 (69%)  
2 10 4 12kg ( 2.05 kg/ )  
가 CA 19-9가 가  
10 24 (92%) 176-910 IU/ml( 481 IU/ml, 1-60  
IU/ml) (p<0.001).  
14.4mm 12.3mm,  
(p>0.05),  
CT 9 (100%) ,  
13 11 (85%)  
가 (p>0.05). CT  
3  
13  
가 10 , 3

Table 1. Adjacency between Intrahepatic Cholangiocarcinoma and Hepatolithiasis

	Mass forming type	Periductal infiltrating and intraductal growth type
Same lobe	11/14 (79%)	3/14 (21%)
Different lobe	10/12 (83%)	2/12 (17%)

12  
8 가  
(p<0.01).  
4mm 12  
2 (16%)가 23  
2 (9%) (p>0.05) (Table 2).

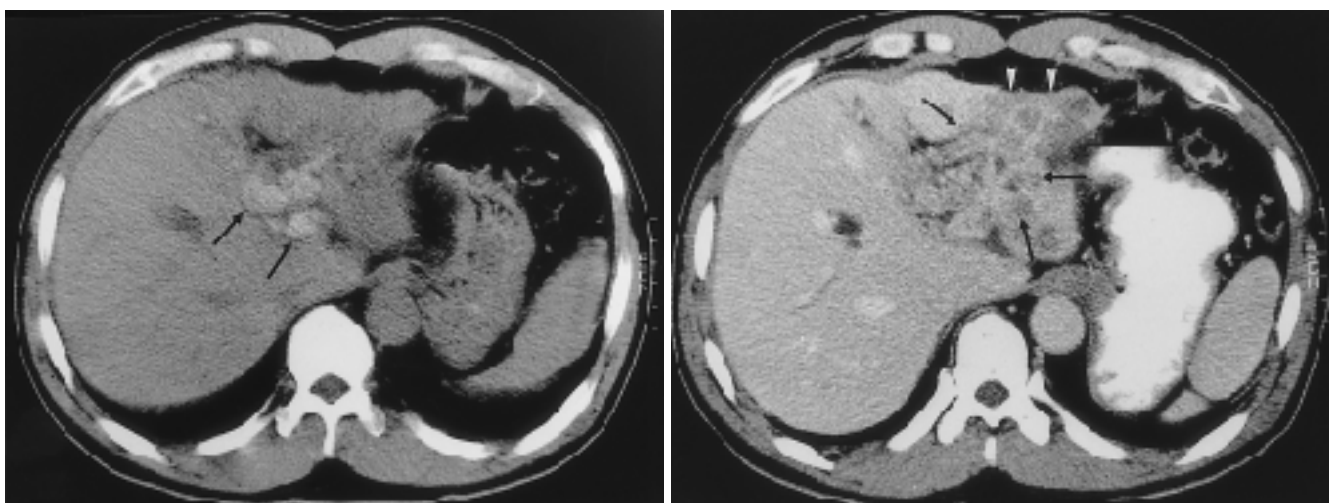
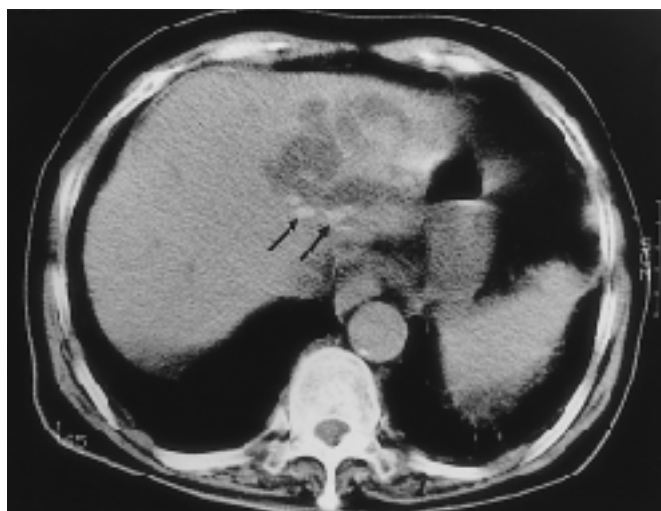
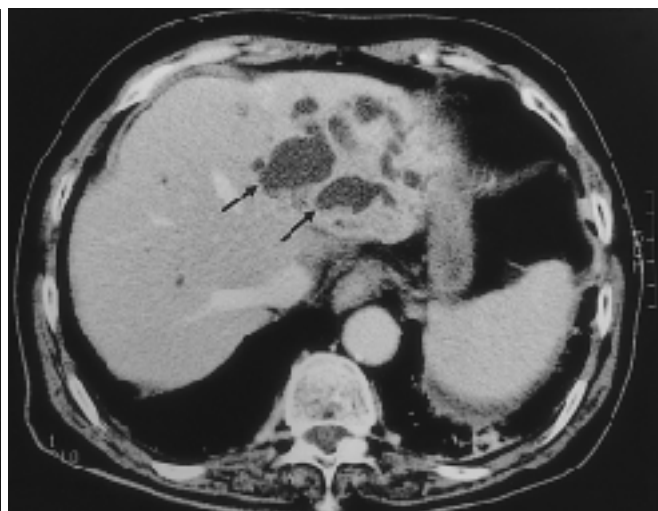


Fig. 2. A 54-year-old man with cholangiocarcinoma associated with hepatolithiasis.  
A. Unenhanced CT shows hyper-attenuating impacted stones within the left main hepatic ducts (arrows).  
B. Contrast-enhanced CT shows multifocal hypo-attenuating nodular lesions (arrows), which have branching pattern along the left intrahepatic bile ducts, and retract hepatic capsule overlying the hepatic parenchyma of the left hepatic lobe (arrowheads).

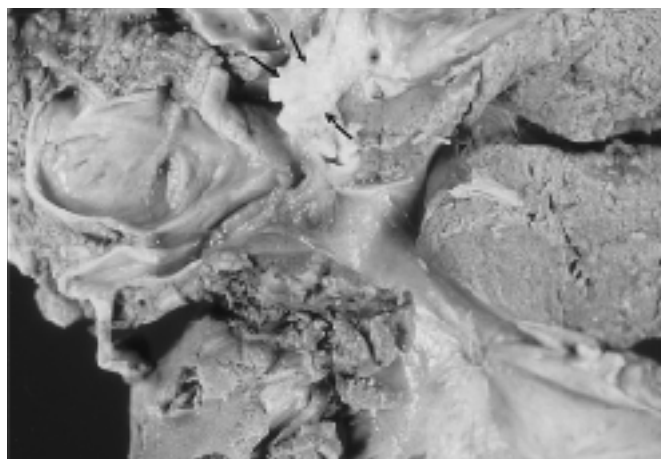




A



B



C

Fig. 4. A 68-year-old man with cholangiocarcinoma associated with hepatolithiasis.

A. Unenhanced CT shows segmental dilatation containing hepatolithiasis (arrows) of the left intrahepatic bile ducts.

B. Contrast-enhanced CT shows localized dilatation of the bile ducts of the left lobe (arrows) without definite mass.

C. Photograph of the gross specimen demonstrates intraductal papillary masses (arrows) within the intrahepatic bile duct. The masses are limited in the mucosal epithelium of the intrahepatic bile duct.

가

CT

CT

(16)

53

10 (18%)

18%,

20%

107

8 (7%),

65

2 (3%)가

(17).

가

CT

CT

(

(17-20),

가

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## **CT Findings of Intrahepatic Cholangiocarcinoma Associated with Hepatolithiasis<sup>1</sup>**

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**Purpose :** To assess the CT findings of intrahepatic cholangiocarcinoma associated with hepatolithiasis.

**Materials and Methods :** The CT features of 26 patients with cholangiocarcinoma and hepatolithiasis were reviewed and compared with those of 23 patients with intrahepatic stones alone, acting as control subjects. CT findings were analyzed for tumor appearance and adjacency to hepatolithiasis. We studied clinical findings, noting the presence or absence of wall thickening or soft tissue attenuation within the bile duct, the luminal diameter of dilated bile duct, and the presence of periductal enhancement, and compared these with the findings for control groups.

**Results :** CT images of the tumor revealed a hepatic low-attenuating mass with peripheral rim enhancement (n= 14, 54 %), or periductal thickening, or low-attenuating lesions in segmental dilatation of intrahepatic bile ducts (n= 12, 46 %). Most hepatic tumors were seen in areas adjacent to hepatolithiasis, or in a bile duct. Compared with control groups, patients with cholangiocarcinoma were old ( $p < 0.001$ ), and showed frequent weight loss and elevated CA 19-9 ( $p < 0.001$ ). With regard to the location of hepatolithiasis, luminal diameter, and periductal enhancement, no significant differences were seen between the two groups ( $p > 0.05$ ).

**Conclusion :** When an intrahepatic low-attenuating mass, or periductal thickening and low-attenuating lesions in segmental dilated intrahepatic duct are found associated in adjacent intrahepatic stones, intrahepatic cholangiocarcinoma should be considered.

**Index words :** Bile ducts, neoplasms  
Bile ducts, CT  
Liver neoplasms, CT

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