

1

2 2 3 2

53  
(n=33), (n=6), (n=14)  
CT  
CT  
CT

(1).

가 1993 1 1998 8  
(1,2). 163

53

(3), 30 77 ( , 58.1 )

(4). 가 31 , 22  
Yamamoto

(5,6)

(I ), (II ),

(III )

I  
Ia, Ib , II

IIb

, III

IIIa,

IIIb,

IIIc

(Fig. 1).

1998 11 4 1999 2 8

, ( , , , ), student-t test .  
 , ,  
 , CT  
 . CT , CT Som-  
 atom Plus-S (Siemens, Erlangen, Germany), HiSpeed Advantage  
 system GE-9800 system (GE Medical Systems, Milwaukee,  
 Wis, USA)  
 , (Bari-um sulfate; E-Z Cat;  
 E-Z-Em, Westbury, NY, U.S.A.) 1 600 mL ,  
 300 mL CT  
 , (iopamidol, Iopamiron 300; Bracco,  
 Milan, Italy) 100-mL 120-mL  
 (Medrad, Pittsburg, Pa, USA) 2.5 -3.0 mL/sec  
 (30-35 sec),  
 (65-70 sec), (2-3 min)  
 1.0-1.5 . 13  
 5 mm 10  
 mm 7 mm ,  
 가  
 , 가  
 , 가  
 CT , (attenuation)  
 , CT  
 ,  
 CT  
 가  
 (I ) 33 (62%), (II ) 6  
 (11%), (III ) 14 (27%)  
 I 33 Ia 25 , Ib 8 , II 5  
 IIa 4 , IIb 2 , III 14 IIIa 8 , IIIb  
 1 , IIIc 3  
 6 (18%), 8 (24%), 5 (15%),  
 3 (60%) ,  
 1 (7%)  
 가  
 2 cm 12cm ( 6.7cm)  
 (Fig. 2, 5).  
 가 (n=5) (n=1)  
 14 4  
 (4.0-4.5cm) , 4  
 , 3  
 (1.0-2.0cm) , 3  
 (Fig. 4, 7).

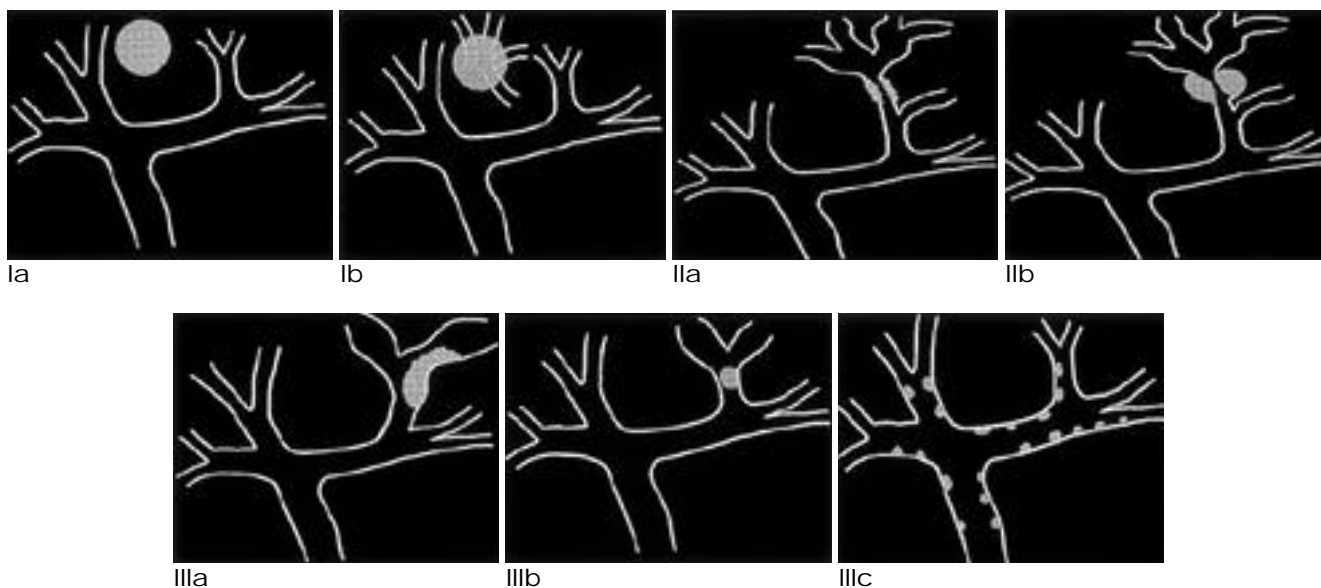


Fig. 1. Classification of intrahepatic cholangiocarcinoma based on gross morphology. Type Ia, mass forming type; type Ib, mass forming with bile duct invasion; type IIa, periductal infiltrating type; type IIb, periductal infiltrating with parenchymal extension; type IIIa, intraductal growth with polypoid mass; type IIIb, intraductal growth with a polyp; type IIIc, intraductal growth with multiple polypoid masses.

(36/39)가 2 92% 1 가  
 14 가  
 2 가 (Table 1). 6 4  
 가 , 1  
 , 1  
 14 5 , 2 (fibro-  
 muscular layer) , 2  
 , 5  
 25 (76%),  
 8 (24%) , 4  
 (67%), 2 (33%) .



Fig. 2. A 54-year-old man with intrahepatic cholangiocarcinoma (mass forming type). Photograph of the gross specimen shows a well-circumscribed, whitish yellow mass (arrows) measuring 6 x 5 cm in the hepatic parenchyma extended to hepatic capsule, which is fibrotic and retracted (arrowheads).

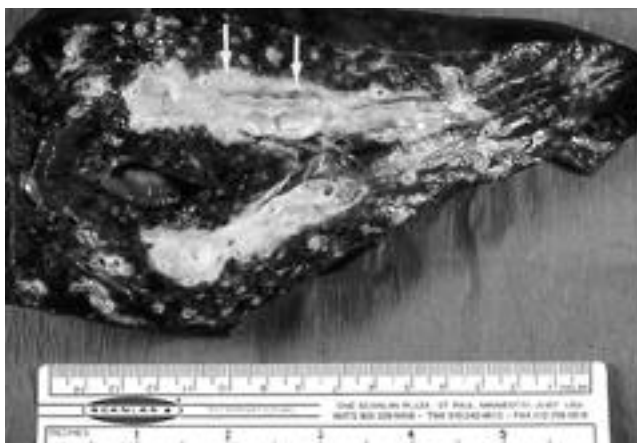


Fig. 3. A 40-year-old man with intrahepatic cholangiocarcinoma (periductal infiltrating type). Photograph of the gross specimen demonstrates infiltrating mass along the left intrahepatic bile duct which has irregular mucosal surface and marked thickened wall (arrows). The mass involves the periductal connective tissue and hepatic parenchyma.

10 (71%), 4 (29%)  
 (p < 0.001).  
 , ,  
 15 (45%), 4 (12%), 1 (3%)가  
 , 2 (33%), 1

Table 1. Histopathologic Features Corresponding Gross Appearance of Intrahepatic Cholangiocarcinoma

	Mass forming (n= 33) (%)	Periductal Infiltrating (n = 6) (%)	Intraductal growth (n = 14) (%)
Tubular adenocarcinoma	31(94)	5(83)	0
Adenosquamous carcinoma	2( 6)	0	0
Squamous carcinoma	0	1(17)	0
Papillary adenocarcinoma	0	0	14(100)

Table 2. Incidence of Lymph Node Metastasis, Intrahepatic Metastasis, and Portal Vein Invasion Corresponding Gross Appearance of Intrahepatic Cholangiocarcinoma

	Mass forming (n= 33) (%)	Periductal Infiltrating (n = 6)(%)	Intraductal growth (n = 14) (%)
Lymph node metastasis	15(45)	2(33)	0
Intrahepatic metastasis	4(12)	1(17)	0
Invasion of portal vein	1( 3)	1(17)	0

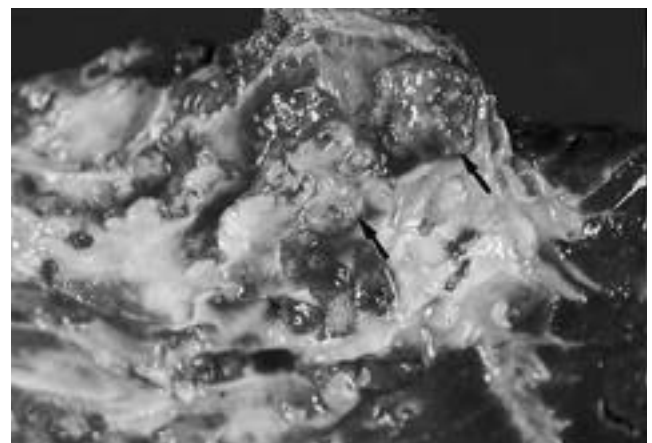
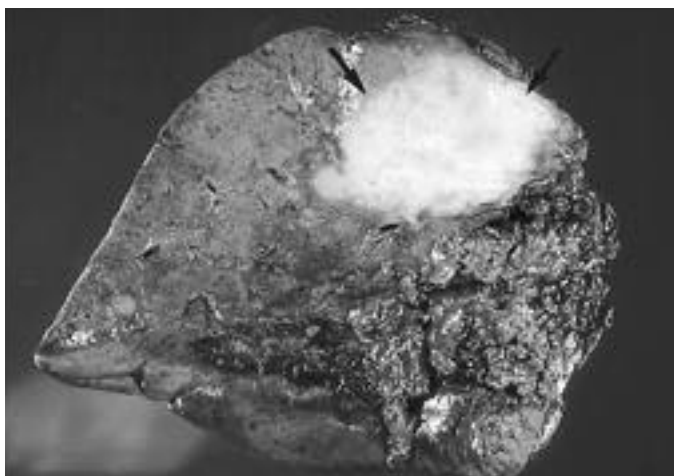


Fig. 4. A 68-year-old man with intrahepatic cholangiocarcinoma (intraductal growth type). Photograph of the gross specimen demonstrates multiple intraductal polypoid masses within the intrahepatic bile duct (arrows). The masses are limited in the mucosal epithelium of the intrahepatic bile duct.

:  
 (17%), 1 (17%)가 , 8 (24%) ,  
 (Table 6 (18%) , CT  
 2). 가 (p < 0.001). 3 (Fig. 6), 3 4 mm 14 12 (86%)  
 CT CT ,  
 CT (Fig. 7). 2  
 가 ,  
 가 가 (Fig. 5), 가



A

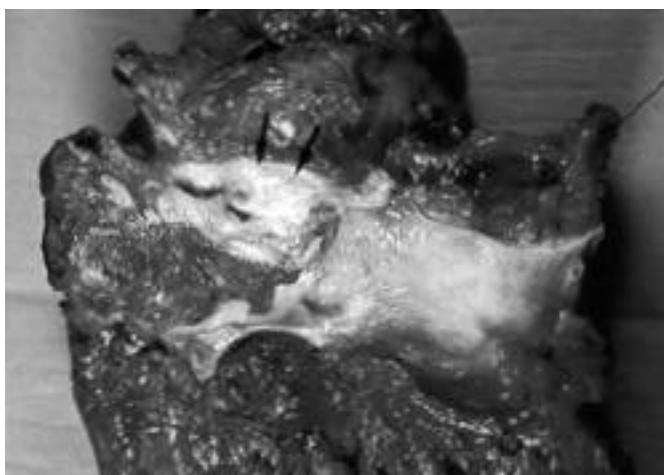


B

Fig. 5. A 50-year-old man with cholangiocarcinoma (mass forming type).

A. Photograph of the gross specimen shows a well-demarcated and homogeneous mass (arrows) with central area of fibrosis.

B. CT obtained during portal venous phase shows hypo-attenuating hepatic mass in the right lobe dome, and peripheral smooth enhancement (arrows).



A



B

Fig. 6. A 57-year-old female with squamous carcinoma of the intrahepatic bile duct (periductal infiltrating type).

A. Photograph of the gross specimen demonstrates periductal infiltrating mass (arrows) in the intrahepatic bile duct, which is diffusely thickened and dilated.

B. CT shows low-attenuating mass along the right posterosuperior segmental duct of the liver (arrows).

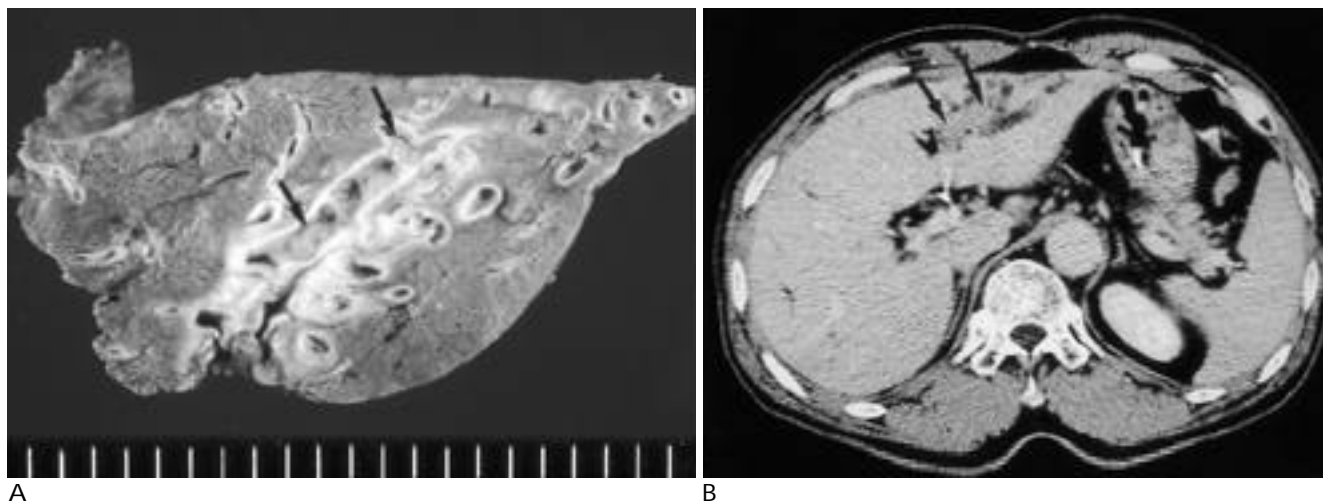


Fig. 7. A 68-year-old man with papillary adenocarcinoma (intraductal growth type).  
 A. Photograph of the gross specimen demonstrates fine granular and polypoid mucosal lesion in the left intrahepatic duct (arrows). The mucosal lesion spreads along the dilated left hepatic duct without invasion of hepatic parenchyma.  
 B. Contrast-enhanced CT shows dilatation of the left intrahepatic duct with intraductal low-attenuating lesion (arrows).

CT

가 (papillary adenocarcinoma)

Peters (9)

(1,7). 5-30%

Mizumoto (10)

(8) 가

가

가

가 가

75%, 60%가

3-5%

50%

(4),

가,

Klatskin(2)

가

가

(metaplasia)

(11).

, Caroli's dis-

ease,

가

(11-14),

가

가 (tubu-

10% 가

가

lar adenocarcinoma)

가  
(15-19),

CT  
가

CT

가 2 cm

10-20%

가

가

CT

(focep)

CT

가 가

(15),

(18).

가  
가

lb 8

lb 2 가

lb

2

lb

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## Intrahepatic Cholangiocarcinoma: Gross Appearance and Corresponding Pathologic and Radiologic Features<sup>1</sup>

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**Purpose:** To assess the clinical and pathologic features of each type of intrahepatic cholangiocarcinoma, which is divided into three types according to gross appearance, and to determine the efficacy of CT in detecting this tumor.

**Materials and Methods:** The pathologic and CT features of 53 surgically proven cases of intrahepatic cholangiocarcinoma were reviewed. On the basis of their gross appearance, the tumors were divided into three types, as follows: mass forming (n= 33), periductal infiltrating (n= 6), and intraductal growth type (n= 14). CT scans were analyzed for sensitivity of detection and correlation between a tumors appearance and its histopathology.

**Results:** The most common histopathologic feature of mass forming and periductal infiltrating type was tubular adenocarcinoma, while in the intraductal growth type, papillary adenocarcinoma (100%) was common. With regard to pattern of tumor spread, intrahepatic and lymph node metastasis were more common in the mass forming and periductal infiltrating type than in the intraductal growth type. CT findings including intrahepatic mass, ductal wall thickening or intraductal mass associated with segmental dilatation of intrahepatic bile ducts, corresponded with these morphologic types.

**Conclusion:** This classification according to gross appearance is of considerable value when interpreting the pathologic features of intrahepatic cholangiocarcinoma. CT seems to be a useful modality for the detection of tumors and may be consistent with their gross morphologic findings.

**Index words:** Bile ducts, neoplasms

Bile ducts, CT

Liver, neoplasms

Liver, CT

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