

: CT ERCP 1

CT ERCP
: 1995 1 1998 12
13 (n=3), (n=5), (n=5),
, CT
, ERCP
, CA19-9
: 13 7 (92.3%),
(69.2%), CT ERCP (69.2%), (61.5%)
50% 5 (55.5%), 3
(33.3%) 가
9 (69.2%), 2 (15.3%), 2 (15.3%)
2 (22.2%), 2 (22.2%)
4 (57.1%), 3 (42.8%)
: 50%
, CA19-9

144

가 (1,3,4,5,6,7). 13
CT ERCP

CT 가
. ERCP

1995 1 1998 12

가 13 7:3 56
5 , 3 , 5

1990 Beger (1) 3 CT 가
가 CA19-9
8 CT 5

7 CT Somatom
plus (Siemens; Enlangen, Germany) CT 10mm
CT 5mm, pitch 1
100-140 ml
2 ml 60 3
(1) CT

(tapering),
(abrupt or smooth termination)

가

50%

가

CT ERCP 2



A



B

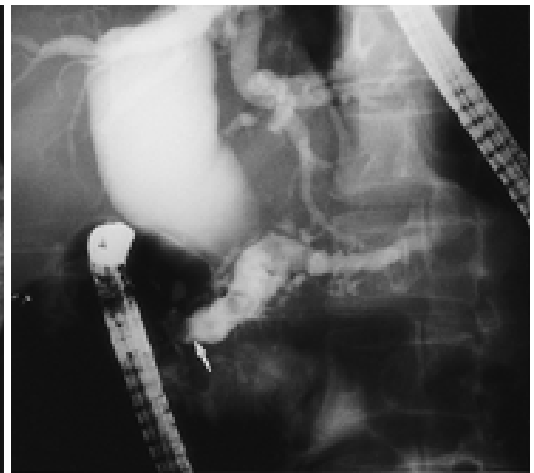
Fig. 1. A 65-old-year man with chronic pancreatitis.

A. Contrast enhancement CT scan shows focal enlargement and non enhancing low attenuation area (arrow) suggesting small pseudocyst or ductal dilatation in head of pancreas.

B. ERCP shows normal major duct and mild dilatation of side branch in head portion (arrow).



A



B

Fig. 2. A 51-year-old man with chronic pancreatitis confirmed by surgery.

A. Contrast enhancement CT scan shows non enhancing low attenuation mass in head of pancreas.

B. ERCP shows abrupt termination (arrow) with irregular dilatation of pancreatic duct, and diffuse dilatation of common bile duct.

9
가
7
CT (Table 1)
(92.3%), (69.2%), (69.2%),
(61.5%),
50% 50%

Table 1. Findings on CT of Mass-Forming Chronic Pancreatitis (n= 13)

CT Findings	No. of Cases (%)
Enhancement pattern	13
Heterogeneous	9 (69.2)
Isoattenuation	2 (15.3)
Hypoattenuation	2 (15.3)
Atrophy of pancreas	4 (30.7)
Pancreatic duct dilatation	13
Below 50%	12 (92.3)
No dilatation	1 (7.7)
CBD dilatation	9
Double duct sign	9
Lymphadenopathy	3
Pseudocyst	2
Collateral vessel	1
Direction of infiltration	2
Diffuse	2 (15.3)
Presence of calcification	8
Location of calcification	8
Mass	4 (30.7)
Duct	4 (30.7)

CBD: common bile duct

9
가
(69.2%) (Fig.1).
가 2 (15.3%)
(Fig. 2)
2 (15.3%) 8 (61.5%) 4
, 4
CT
(30.7%), (23%), 가 (15.3%),
(7.7%) (Table 2)
5 (55.5%), 3 (33.3%)

Table 2. ERP Findings for the Detection of Chronic Pancreatitis (n= 9)

ERP findings	No. of cases (%)
Pancreatic duct dilatation	9
Irregular	5 (55.5)
Smooth	3 (33.3)
No	1 (11.1)
Beaded	0
Stricture of pancreatic duct	5
Smooth narrowing	2 (22.2)
Abrupt termination	2 (22.2)
Short segmental stricture	1 (11.1)

CBD: common bile duct

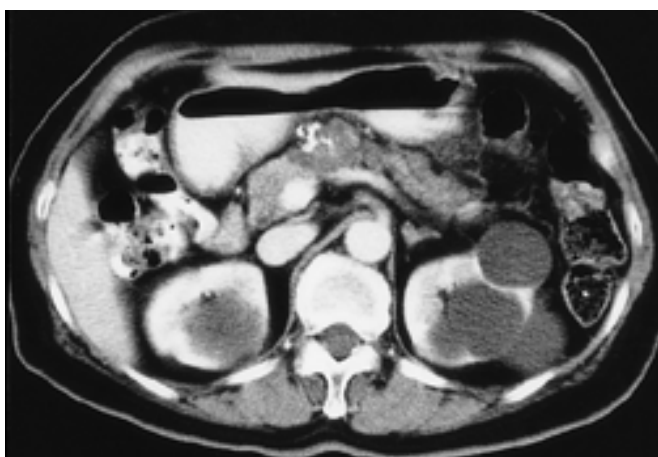
ERP: endoscopic retrograde pancreatography

Table 3. ERC Findings for the Detection of Chronic Pancreatitis (n= 7)

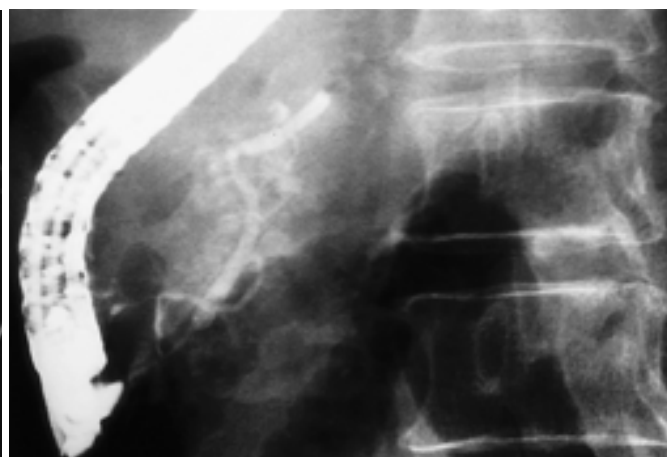
ERC findings	No. of cases (%)
Dilatation of CBD	6
Stricture of CBD	7
Smooth narrowing	4 (57.1)
Abrupt termination	3 (42.8)

CBD: common bile duct

ERC: retrograde cholangiography



A



B

Fig. 3. A 66-old-year woman with chronic pancreatitis confirmed by surgery.

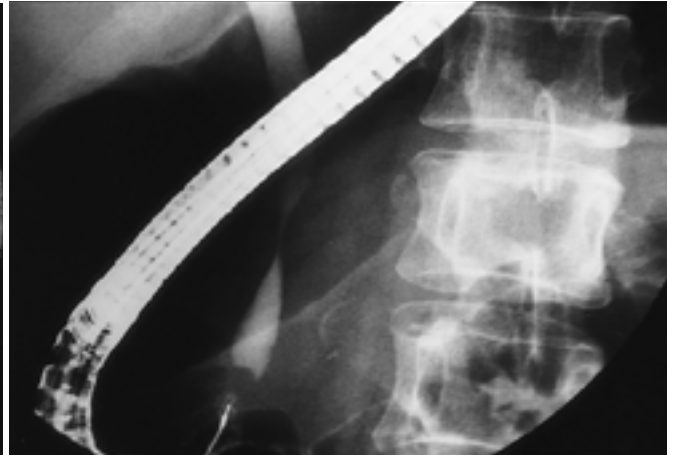
A. Contrast enhancement CT scan shows nonenhancing low attenuation mass at body of pancreas with punctate calcification.

B. ERCP shows abrupt termination of pancreatic duct at body portion.

US, CT
 ERCP
 가
 . Neff(7) 13
 CT
 가
 가
 (groove pancreatitis)
 가
 (1). 가 (1).
 가
 (mass forming pancreatitis) (2-5).
 가
 . Karasawa (8) CT
 . Yamaguchi (6) 13

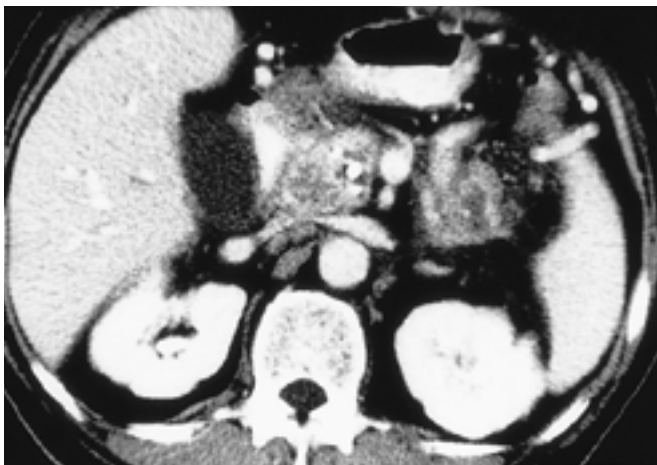


A



B

Fig. 4. A 45-old- year woman with chronic pancreatitis confirmed by surgery.
 A. Contrast enhancement CT scan shows inhomogeneous enhancement of head of pancreas, it is common findings of mass-forming chronic pancreatitis.
 B. ERCP shows smooth narrowing of common bile duct.



A



B

Fig. 5. A 77-year-old man with chronic pancreatitis confirmed by percutaneous needle biopsy.
 A. Contrast enhancement CT scan shows multiple low attenuation areas in head and tail of pancreas and punctate calcification.
 B. ERCP reveals abrupt termination and diffuse dilatation of common bile duct.

가 5, 3

50%

50%

50%

가

(61.5%).

2-14%

ERCP

Ralls(9)

ERCP 가 CT

가 2 (22.2%),

가 3 (42.8%)

20-30%

(10).

CA19-9

(12).

가

(11).

가

CT ERCP

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Mass-Forming Chronic Pancreatitis: CT and ERCP Features¹

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Purpose: To describe the CT and ERCP findings of mass-forming chronic pancreatitis.

Materials and Methods: CT and ERCP features were assessed in 13 patients suffering from mass-forming chronic pancreatitis. Diagnosis was on the basis of surgery (n= 5), percutaneous needle biopsy (n= 3), and clinical follow-up (n= 5). Contrast-enhanced CT was available for all patients: five underwent dynamic study and ERCP was performed in 12. On CT and ERCP, both groups were evaluated with regard to the presence and degree of pancreatic ductal dilatation (greater or less than 50 % of total gland width), double duct sign, enhancement pattern, pancreatic parenchymal calcification (site and distribution pattern), mass identification, the direction of infiltration, pancreatic parenchymal atrophy, configuration at the site of obstruction in the pancreatic and common bile duct, lymphadenopathy, vascular encasement, and vascular engorgement or increased collateral vessels in the peripancreatic space.

Results: Seven of 13 patients had suffered chronic alcoholism. Serum CA19-9 levels were normal in all patients except one. Common CT and ERCP findings of mass-forming chronic pancreatitis included pancreatic duct dilatation (92.3 %), double duct sign (69.2 %), inhomogeneous enhancement of the mass (69.2 %), and the presence of calcification (61.5 %). Patterns of pancreatic duct dilatation were irregular in five patients (38.4 %) and smooth in three (23.1 %). In all patients, duct dilatation was less than 50 % of total gland width. Enhancement patterns of the pancreatic mass were inhomogeneous (69.2 %), a nonenhancing low attenuation mass (15.3 %), and homogeneous enhancement (15.3 %). Configuration at the site of obstruction in the pancreatic duct was abrupt termination in two patients (15.4 %) and smooth termination in two (15.4 %). The common bile duct terminated abruptly in three patients (23.1 %), and in four (30.8 %) smooth narrowing was observed.

Conclusion: Common findings of mass-forming chronic pancreatitis were duct dilatation of less than 50 % of total gland width, double duct sign, inhomogeneous enhancement of the mass, and the presence of calcification. These were combined with observation of clinical findings such as chronic alcoholism and CA19-9 levels, which are useful indicators for differentiating mass-forming chronic pancreatitis from pancreatic cancer.

Index words: Pancreas
Pancreatitis, CT
Pancreatitis, ERCP

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