

# *Acta Medica Okayama*

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*Volume 39, Issue 2*

1985

*Article 3*

APRIL 1985

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## Abstract

Peritoneoscopic findings of 39 patients with alcoholic liver cirrhosis (ALC) were compared with those of 95 patients with non-alcoholic liver cirrhosis (NALC). They were selected from 245 patients with liver cirrhosis subjected to peritoneoscopy in the 7 year period from 1975 to 1981. Out of the 95 NALC patients, 24 had hepatitis B surface antigen. The ALC patients had nodules which varied in size (61%), large depressions (69%), and a markedly rounded edge of the liver (33%) more often than NALC patients (18, 43 and 3%, respectively). Nodularity differed between the right and left lobes in ALC (41%) more often than in NALC (16%). Interstitial reddish markings and patchy nodules were, however, more frequent in NALC (51 and 28%, respectively) than in ALC (8 and 5%, respectively). Lymphatic vesicles were observed both in ALC (85%) and NALC (78%). In conclusion, the peritoneoscopic features which suggested ALC were the coexistence of nodules of various sizes, large depressions and a markedly dull edge of the liver. Interstitial reddish markings and patchy nodules were more indicative of NALC than ALC.

**KEYWORDS:** peritoneoscopy, alcoholic liver cirrhosis, non-alcoholic liver cirrhosis

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\*PMID: 3159179 [PubMed - indexed for MEDLINE]

Acta Med. Okayama 39, (2), 105-112 (1985)

## PERITONEOSCOPY OF ALCOHOLIC LIVER CIRRHOSIS IN COMPARISON WITH NON-ALCOHOLIC LIVER CIRRHOSIS

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*Received August 9, 1984*

*Abstract.* Peritoneoscopic findings of 39 patients with alcoholic liver cirrhosis (ALC) were compared with those of 95 patients with non-alcoholic liver cirrhosis (NALC). They were selected from 245 patients with liver cirrhosis subjected to peritoneoscopy in the 7 year period from 1975 to 1981. Out of the 95 NALC patients, 24 had hepatitis B surface antigen. The ALC patients had nodules which varied in size (61%), large depressions (69%), and a markedly rounded edge of the liver (33%) more often than NALC patients (18, 43 and 3%, respectively). Nodularity differed between the right and left lobes in ALC (41%) more often than in NALC (16%). Interstitial reddish markings and patchy nodules were, however, more frequent in NALC (51 and 28%, respectively) than in ALC (8 and 5%, respectively). Lymphatic vesicles were observed both in ALC (85%) and NALC (78%). In conclusion, the peritoneoscopic features which suggested ALC were the coexistence of nodules of various sizes, large depressions and a markedly dull edge of the liver. Interstitial reddish markings and patchy nodules were more indicative of NALC than ALC.

*Key words :* peritoneoscopy, alcoholic liver cirrhosis, non-alcoholic liver cirrhosis.

Alcohol is the main cause of liver cirrhosis (LC) in Europe, contrary to hepatitis viruses in Japan. However, the ratio of alcoholic liver cirrhosis (ALC) patients among all LC patients increased from 11% in 1966 to 17% in 1977 in Japan (1). In peritoneoscopic observation of viral hepatitis, Kalk's classification (2) and Shimada's classification (3) have been widely used. ALC has been studied histologically (4, 5) and peritoneoscopically (6-12), but ALC has not been compared in detail with non-alcoholic liver cirrhosis (NALC) by peritoneoscopy. In this paper, peritoneoscopic findings of ALC patients are compared with those of NALC patients with and without hepatitis B surface antigen (HBsAg).

### SUBJECTS AND METHODS

Two hundred forty-five patients were diagnosed peritoneoscopically as code number 400 (mound-like nodules, 196 patients) or 500 (semispherical nodules, 49 patients) in the 7 year period from 1975 to 1981 (Table 1). Thirty-nine of them who were heavy drinkers with a

TABLE 1. SUBJECTS AND CONTROLS

Classification	Drinking history	HBsAg	History of hepatitis or blood transfusion	No. of cases	Code No.		Sex		Age Mean $\pm$ SD y.o.
					400	500	Male	Female	
ALC	(+)	(-)	(-)	39	34	5	39	0	49 $\pm$ 9
NALC				95	71	24	65	30	50 $\pm$ 12
BLC	(-)	(+)	(+) or (-)	24	18	6	20	4	41 $\pm$ 12
NBLC	(-)	(-)	(+) or (-)	71	53	18	45	26	53 $\pm$ 10
Other LC				75	65	10	69	6	50 $\pm$ 8
1.	(+)	(+)	(+) or (-)	4	4	0	4	0	47 $\pm$ 9
2.	(+)	(-)	(+)	24	19	5	24	0	50 $\pm$ 8
3.	( $\pm$ )	(+)	(+) or (-)	11	10	1	9	2	52 $\pm$ 7
4.	( $\pm$ )	(-)	(+)	32	28	4	29	3	50 $\pm$ 8
5.	( $\pm$ )	(-)	(-)	4	4	0	3	1	47 $\pm$ 4
Specific LC				5	3	2	3	2	36 $\pm$ 21
LC with HCC				31	23	8	26	5	57 $\pm$ 7
Total				245	196	49	202	43	

ALC; alcoholic liver cirrhosis. NALC; non-alcoholic liver cirrhosis. BLC; NALC with HBsAg. NBLC; NALC without HBsAg. LC; liver cirrhosis. HCC; hepatocellular carcinoma. Drinking history (+); heavy drinkers with a drinking history of over 120 g alcohol daily for more than 10 years. Drinking history ( $\pm$ ); habitual drinkers who were not compatible with heavy drinkers.

daily intake over 120 g alcohol for more than 10 years (1), had neither HBsAg nor anti-HBs and had no history of hepatitis or blood transfusion were selected as ALC patients. They consisted of 34 patients with code number 400 and 5 patients with code number 500. Ninety-five patients without a drinking history were selected as NALC patients. They were subclassified into 24 LC patients (18 with code number 400 and 6 with 500) positive for HBsAg (BLC) and 71 LC patients (53 with code number 400 and 18 with 500) negative for HBsAg (NBLC). Seventy-five other patients with LC included 4 heavy drinkers with HBsAg, 24 heavy drinkers with a history of hepatitis or blood transfusion and 47 habitual drinkers who were not compatible with heavy drinkers. In order to obtain findings specific to ALC, these 75 LC patients were excluded from the study. Patients with specific LC such as primary biliary cirrhosis, Wilson's disease, and 31 LC patients with hepatocellular carcinoma were also excluded. The distribution of sex and age in each group is shown in Table 1. HBsAg and anti-HBs were estimated by reversed passive hemagglutination or radioimmunoassay.

The following 9 peritoneoscopic features were analysed (Table 2): 1) size and distribution of nodules (code number 10, nodules smaller than 3 mm in diameter with narrow internodular space; code number 20, those larger than 5 mm also with narrow internodular space; code number 30, nodules with a wide internodular distance irrespective of the nodule size, and another group with nodules of various sizes), 2) difference in nodularity between the right and left lobes, 3) existence and localization of large depressions, 4) dullness of the liver edge graded as slight, moderate and marked, 5) interstitial reddish markings, 6) patchy nodules (Kalk's Bunteknöten), 7) lymphatic vesicles graded as slight, moderate and marked, 8) small vessel proliferation, and 9) yellowish color suggestive of fatty deposition (13).

TABLE 2. PERITONEOSCOPIC FINDINGS OF ALCOHOLIC LIVER CIRRHOSIS AND NON-ALCOHOLIC LIVER CIRRHOSIS

Peritoneoscopic Findings		ALC 39	NALC 95	BLC 24	NBLC 71
Size and	10	11 (28)	41 (43)	8 (33)	33 (46)
Distribution	20	3 (8) — * —	24 (25)	3 (13)	21 (30)
of Nodule	30	1 (3)	13 (14)	5 (21)	8 (11)
	various	24 (61) — * * * —	17 (18)	8 (33) — * —	9 (13)
Difference	Total	16 (41) — * * —	16 (16)	6 (25)	10 (14)
of	RT+QD > LT	13 (81)	12 (75)	6 (100) — * —	6 (60)
Nodularity	RT+QD < LT	3 (19)	4 (25)	0 (0)	4 (40)
	Total	27 (69) — * * —	41 (43)	7 (29)	34 (48)
Large	RT	7 (25)	10.5 (26)	2 (29)	8.5 (25)
Depression	QD	5 (19) — * * * —	23 (56)	5 (71)	18 (53)
	LT	15 (56) — * * * —	7.5 (18)	0 (0)	7.5 (22)
Dullness of	SL	7 (18) — * —	38 (40)	16 (67) — * * —	22 (31)
Liver Edge	MD	19 (49)	54 (57)	7 (29) — * * —	47 (66)
	MK	13 (33) — * * * —	3 (3)	1 (4)	2 (3)
Interstitial	—	36 (92) — * * * —	47 (49)	13 (54)	34 (49)
Reddish	SL	3 (8)	11 (12)	5 (21)	6 (8)
Marking	MD	0 (0) — * —	14 (15)	2 (8)	12 (17)
	MK	0 (0) — * * —	23 (24)	4 (17)	19 (27)
Patchy	—	37 (95) — * * —	68 (72)	11 (46) — * * —	57 (80)
Nodule	SL	2 (5)	8 (8)	5 (21) — * —	3 (4)
	MD	0 (0)	7 (7)	3 (13)	4 (6)
	MK	0 (0) — * —	12 (13)	5 (21)	7 (10)
Lymphatic	—	6 (15)	21 (22)	2 (8)	19 (27)
Vesicle	SL	15 (38)	37 (39)	15 (63) — * —	22 (31)
	MD	8 (21)	18 (19)	4 (17)	14 (20)
	MK	10 (26)	19 (20)	3 (13)	16 (23)
Small	—	22 (56)	67 (70)	19 (79)	48 (68)
Vessel	+	17 (44)	28 (30)	5 (21)	23 (32)
Yellowish	—	34 (87)	87 (92)	23 (96)	64 (90)
Color	+	5 (13)	8 (8)	1 (4)	7 (10)

ALC, alcoholic liver cirrhosis; NALC, non-alcoholic liver cirrhosis; BLC, NALC with HBsAg; NBLC, NALC without HBsAg. RT, right lobe; QD, quadrate lobe; LT, left lobe. SL, slight; MD, moderate; MK, marked. Decimal point of patients represent more than 2 large depressions observed in a patient. ( ) %. \*  $p < 0.05$ . \*\*  $p < 0.01$ . \*\*\*  $p < 0.001$ .

RESULTS

Nodules of various sizes coexisted more often in ALC patients (61 %) than in NALC patients (18 %,  $p < 0.001$ , Table 2, Fig. 1). Code number 20 was more frequent in NALC than in ALC, but the incidence of code number 10 and 30 was not different. Nodules of various sizes were more frequent in BLC (33 %) than in NBLC (13 %,  $p < 0.05$ ). Nodularity was more often different between

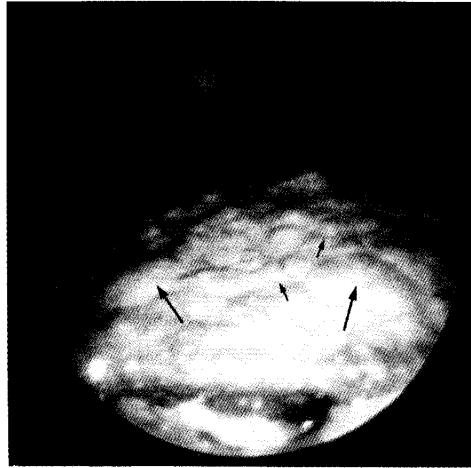


Fig. 1. Peritoneoscopic findings of the left lobe of a 35-year-old male with alcoholic liver cirrhosis. Note variety of nodular size between 3 mm (short arrows) and 2 cm (long arrows) in diameter. Numerous lymphatic vesicles are observed on the edge.

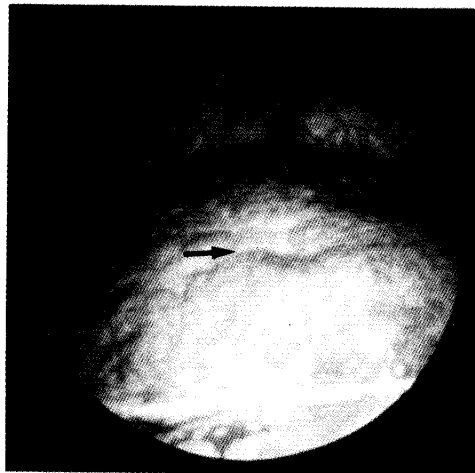


Fig. 2. Peritoneoscopic findings of the central portion of the left lobe of a 48-year-old male with alcoholic liver cirrhosis. A large depression 3 × 4 cm in size (arrow) is observed. Nodules of various sizes are observed over the liver surface.

the right and left lobes in ALC (41 %) than in NALC (16 %,  $p < 0.01$ ), and more often advanced on the right lobe in BLC (100 %) than in NBLC (60 %,  $p < 0.05$ ).

Large depressions were observed more frequently in ALC (69 %) than in NALC (43 %,  $p < 0.01$ , Fig. 2). The depressions existed often on the left lobe in ALC (56 %), and on the quadrate lobe in NALC (56 %).

The liver edge was dull more frequently in ALC (82 %) than in NALC (60 %,  $p < 0.05$ ). Especially, a markedly dull edge was more frequent in ALC (33 %) than in NALC (3 %,  $p < 0.001$ ). The edge was dull more frequently in NBLC (69 %) than in BLC (33 %,  $p < 0.01$ ).

Interstitial reddish markings were less frequent in ALC (8 %) than in NALC (51 %,  $p < 0.001$ ). All of those in ALC were of slight degree (8 %), whereas one-third of those in NALC were of moderate to marked degree (39 %). But there were no differences between BLC and NBLC.

Patchy nodules were observed less frequently in ALC (5 %) than in NALC (28 %,  $p < 0.01$ ), and were of slight degree in ALC. Patchy nodules of marked degree were observed only in NALC (13 %,  $p < 0.05$ ), and were more frequent in BLC (54 %) than in NBLC (20 %,  $p < 0.01$ ).

Lymphatic vesicles were often observed in both ALC (85 %) and NALC (78 %), and did not differ in severity between ALC and NALC. Lymphatic vesicles of slight degree were more frequent in BLC (63 %) than in NBLC (31 %,  $p < 0.05$ ).

There were no differences in the incidence of proliferation of small vessels and yellowish color in ALC and NALC.

#### DISCUSSION

Peritoneoscopic findings of ALC include fine granular or small nodules, undulating liver surface, hepatomegaly, markedly dull liver edge, lymphatic vesicles (6, 7, 9-11), usually fine granular uniform nodules in the early stage, and occasional large nodules in the later stage (8, 12, 14, 15). However, peritoneoscopic diagnosis of ALC becomes difficult when these findings are mixed with necrotic changes (14). The present peritoneoscopic observation of LC patients with a history of heavy drinking revealed that nodules of various sizes coexisted more often in ALC (61 %) than in NALC (18 %). This variety in nodule size is an important feature suggestive of ALC.

Large scars or depressions have been observed by scintigraphy and peritoneoscopy in the quadrate lobe and in the upper portion of the right lobe in ALC patients (14, 16). Large depressions were more frequent in ALC (69 %) than in NALC (43 %) under peritoneoscopy. The depressions were often found in the left lobe in ALC (56 %) and in the quadrate lobe in NALC (56 %). Large depressions were frequently observed on the area left of Cantlie's line in both ALC (56 %) and NALC (74 %), but they were more frequent on the left lobe in ALC (56 %) than in NALC (18 %). Alcohol is absorbed in the stomach and carried mainly

to the left lobe of the liver through the gastric veins via the portal vein (17). The frequent formation of large depressions on the left lobe may be related to this stream phenomenon.

The liver edge was round more frequently in ALC (82 %) than in NALC (60 %). Fatty deposition and ballooning of hepatocytes due to the injuring of organelles by alcohol are likely to cause hepatomegaly and round liver edge (6, 18). However, the present patients with markedly dull liver edge did not always show fatty deposition.

Kawamoto (19) reported that reddish markings were more frequently observed in alcoholic liver diseases, especially in acute alcoholic hepatitis, than in hepatitis-B associated liver diseases. In the present study, however, interstitial reddish markings and patchy nodules were scarcely observed in ALC (8 and 5 %, respectively), in contrast to high incidence (51 and 28 %, respectively) in NALC. Interstitial reddish markings have been reported as an important ominous finding in the clinical course from viral hepatitis to liver cirrhosis (20, 21). Reddish patches and patchy nodules are also important findings in viral hepatitis (22). Therefore, interstitial reddish markings and patchy nodules suggest the patient to have not ALC, but rather NALC.

Lymphatic vesicles have been suggestive of alcoholic liver injury (11, 12, 23). In the present study, however, the incidence of lymphatic vesicles in ALC (85 %) and NALC (78 %) did not differ.

Yellowish discoloration of the liver suggestive of fatty deposition was observed in 13 % of the patients with ALC, but the incidence was not different from that in NALC (8 %). Peritoneoscopic diagnosis of fatty liver has been impossible when histological fatty deposition was less than 30 % (24). In our series, patients showing yellowish discoloration of the liver were few in spite of histologically apparent fatty deposition. Unclearness of the yellowish color is probably due to the wide-spread distribution of fatty droplets in the nodules, thickening of the capsule, or fibrosis (25).

In conclusion, the peritoneoscopic features suggestive of ALC were the coexistence of nodules of various sizes, large depressions and a markedly dull liver edge. Interstitial reddish markings and patchy nodules were more indicative of NALC than ALC.

#### REFERENCES

1. Takeuchi, J., Okudaira, M., Takada, A., Ohta, Y., Fujisawa, K., Ito, S., Tsujii, T. and Hasumura, Y.: The increasing incidence of alcoholic liver diseases in Japan (1969-1977). *Jpn. J. Gastroenterol.* 76, 2178-2185, 1979 (in Japanese).
2. Kalk, H.: Über die Leberzirrhose nach Hepatitis Epidemica. *Dtsch. Med. Wschr.* 3. 161-168, 1948.
3. Shimada, Y., Itoshima, T., Ohta, W., Fukuhara, J., Inoue, T., Kubota, M. and Kobayashi, T.: A new classification of liver surface pictures by peritoneoscopic photography. *Gastroenterol. Endosc.* 13, 68-76, 1973 (in Japanese).
4. Takeuchi, J., Takada, A., Kato, Y., Hasumura, Y., Ikegami, F. and Matsuda, Y.: Hepatic changes



- in chronic alcoholic rats following periodic acute alcoholic intoxications. *Am. J. Clin. Nutr.* **24**, 628-636, 1971.
5. Popper, H. and Lieber, C.S.: Histogenesis of alcoholic fibrosis and cirrhosis in the baboon. *Am. J. Pathol.* **98**, 695-710, 1980.
  6. Beck, K.: *Farbatlas der Laparoskopie*. F.K. Schattauer Verlag, Stuttgart, pp. 168-183, 1980.
  7. Dagnini, G.: *Clinical Laparoscopy*. Piccin Medical Books, Pauda, pp. 127-144, 1980.
  8. Otsuki, M., Ota, M., Suzuki, H., Sugawara, T., Wakui, K. and Miura, K.: Peritoneoscopic features of alcoholic liver injury. *Jpn. Clin. Med.* **34**, 3202-3207, 1976 (in Japanese).
  9. Takebayashi, J., Yamada, N., Dan, A., Sasaki, N., Jinno, K., Yamamoto, H., Ishiko, M., Iwahara, S., Hirakawa, H., Hirata, K., Shimada, Y. and Nagashima, H.: The clinical and pathological studies on alcoholic hepatitis. *Jpn. J. Gastroenterol.* **74**, 449-460, 1977 (in Japanese).
  10. Kawata, S., Kiyonaga, G. and Kojima, J.: A study on peritoneoscopic liver surface figures in alcoholic liver injury. Transition of the unevenness. *Acta Hepatol. Jpn.* **20**, 818-827, 1979 (in Japanese).
  11. Ohtake, H. and Harada, H.: Laparoscopic findings on alcoholic cirrhosis of the liver. *Gastroenterol. Endosc.* **23**, 1495-1497, 1981 (in Japanese).
  12. Imai, H., Fujii, D., Watanabe, A. and Shimada, Y.: Peritoneoscopic and histological examinations of patients with alcohol-induced hepatic injury. *Gastroenterol. Endosc.* **23**, 104-111, 1981 (in Japanese).
  13. Teschke, R.: Diagnostik alkoholbedingter Leberschaden. *Dtsch. Med. Wschr.* **39**, 1334-1336, 1980.
  14. Wallnöfer, H.: Alkohol-toxische Zirrhose. In *Synopsis der Leberkrankheiten*, ed. H. Wallnöfer, George Thieme Verlag, Stuttgart, pp. 150-158, 1974.
  15. Popper, H., Rubin, E., Krus, S. and Schaffner, F.: Postnecrotic cirrhosis in alcoholics. *Gastroenterology* **39**, 669-686, 1960.
  16. Ooka, T., Matsumura, T., Yoshihara, H., Yamada, M. and Nakamura, H.: Studies on alcoholic hepatic injuries — the first report pathological and angiological investigation to the false positive hepatic scan in patients with alcoholic liver cirrhosis —. *Acta Hepatol. Jpn.* **22**, 1117-1127, 1981 (in Japanese).
  17. Iwase, T.: Studies on the portal circulation using <sup>131</sup>I labelled macroaggregated albumin (MAA). *Jpn. J. Gastroenterol.* **65**, 58-68, 1968 (in Japanese).
  18. Matsuda, Y., Baraona, E., Salaspuro, M. and Lieber, C.S.: Effects of ethanol on liver microtubules and Golgi apparatus. *Lab. Invest.* **41**, 455-463, 1979.
  19. Kawamoto, M.: Peritoneoscopic examination and its histological findings in alcoholic liver injury — comparative study with hepatitis-B associated liver diseases —. *Gastroenterol. Endosc.* **25**, 833-851, 1983 (in Japanese).
  20. Ohta, W.: Significance of reddish asteroidal and mesh-work markings on the liver surface of chronic hepatitis observed by peritoneoscopy — observations of the liver cell necrosis in relation to the portal and hepatic veins —. *Acta Hepatol. Jpn.* **16**, 448-463, 1975 (in Japanese).
  21. Shimada, Y.: Evolution of cirrhosis from viral hepatitis. In *Peritoneoscopic Observations*. Ishiyaku Publishers, Tokyo, pp. 233-246, 1979 (in Japanese).
  22. Kubota, M., Shimada, Y., Itoshima, T., Ohta, W., Fukuhara, J., Ukida, M., Kita, T., Hirohata, M. and Yamada, G.: A case showing peculiar reddish markings followed by Kalk's patchy markings on liver surface. *Acta Hepatol. Jpn.* **15**, 94-102, 1974 (in Japanese).
  23. Itoshima, T., Shimada, Y., Ohta, W., Fukuhara, J., Inoue, T., Kubota, M. and Ukida, M.: Studies of lymphatic vesicles on liver surface by peritoneoscopy. In *Proceedings of First Asian-Pacific Congress of Endoscopy*, in Kyoto, pp. 317-319, 1973.

24. Hanyu, T., Tanabe, T., Mima, S., Sekiya, C., Yazaki, Y. and Namiki, M. : Peritoneoscopic findings in comparison with histology in fatty liver. *Gastroenterol. Endosc.* **22**, 153, 1973.
25. Ido, K., Yoshida, Y., Ueno, N., Kawamoto, C., Horiguchi, M., Nagasawa, S., Tanaka, M., Seki, H., Yamanaka, T., Sakai, H., Kimura, K. and Matsumoto, S. : Laparoscopic features of fatty liver in alcoholics and non-alcoholics. *Gastroenterol. Endosc.* **23**, 1779-1787, 1981 (in Japanese).