

## Differential Diagnosis of an Abdominal Tumors of Uncertain Origin Using Fine Needle Aspiration Biopsy (FNAB)

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### ABSTRACT

FNAB under ultrasonic guidance was performed on 14 cases with abdominal tumors of uncertain origin. All of them could not be clarified their relationship with the liver, the biliary tract, the pancreas or the alimentary tract by routine clinical exams including diagnostic imaging such as CT and Ultrasonography. Preoperating histological diagnosis has been obtained for 12 of these by FNAB, thus diagnostic rate being 85.7%.

The details of tumors identified by autopsy and operations were: 3 cases of lymphoma; 3 cases of leiomyosarcoma; 4 cases of adenocarcinoma; 2 cases of hematoma; and 1 case of inflammatory mass. Non-epithelial tumor was most frequently observed. FNAB is a simple diagnostic method with high cost-effectiveness for determining the therapeutic plan for an abdominal tumor of uncertain origin which is encountered in the daily treatment.

Recently, prior to other examinations diagnostic imaging methods such as ultrasonography or CT have been adopted more and more frequently in the diagnosis of an abdominal tumoral lesion. Especially, concomitant use of FNAB under ultrasonic guidance has become routine in the diagnosis of a tumor developed in the liver, the biliary tract and the pancreas, and the authors have informed of the results of the same<sup>4,5)</sup>. However, there are not a few cases in which an abdominal tumor has no relationship with the liver, the biliary tract and the pancreas on diagnostic image, presents no obvious findings on X-ray fluorography, and is not identified even in the gynecologic and urological examinations. This is due to the fact that the recent advanced diagnostic imaging methods are rather powerless in approaching to the histological diagnosis of a tumor itself, while capable of clarifying the morphology and size of the tumor, and its rela-

tionship with the peripheral organs. After all, it was necessary to extract tissue sections through an exploratory laparotomy for the purpose of determining a definite therapeutic principle against the tumor. Instead, the authors performed a percutaneous, transabdominal FNAB for the purpose of clarifying preoperative tissue diagnosis of tumors, and obtained good results. We will state the summary thereof.

### MATERIALS AND METHODS

The apparatus used is a syringe pistol of Cameco Co. LTD. and an ultrasonic probe (UST-507BP-3.5) of Aloca. A needle (21G, 15 cm) slightly thicker and longer than that used for the head and neck masses and the breast masses was used. MGG method was used for staining smears. Target tumors, as mentioned above, were 14 cases of which origins were not identified by the usual examinations including

the diagnostic imaging methods. The frequency of puncture was only once in all the cases.

### RESULTS

The position and the photo of CT image (or ultrasonograph) and the photo of FNAB of the abdominal tumor of each case are shown in the upper paragraph (A) and the lower paragraph (B) of the Fig., respectively. The solid line, the broken line, and the horizontal line on the tumor, represent well-delimited tumor, poorly-delimited tumor and site of slice on CT and ultrasonography, respectively.

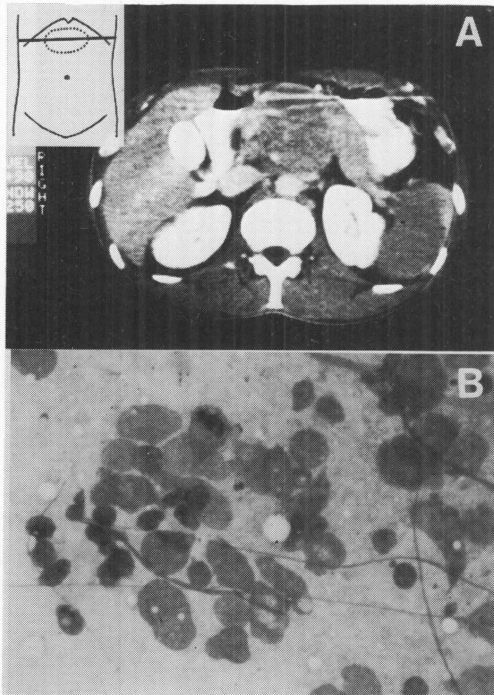


Fig. 1

#### Case 1

A 44-year-old man. The patient presented a goose-egg-sized, hard, pulsatile tumor with its smooth surface in the epigastrium. Although a pancreatic tumor was first suspected because of his diffuse backache, there was a finding (Fig. 1A) indicating the tumor lifting up the body of the pancreas from behind on CT, suggesting an extrapancreatic tumor. Since, according to FNAB, cells only with polymorphous, big sized nuclei were scattered and there was no other in-

flammatory cell at all, the case was diagnosed as lymphoma (Fig. 1B). The autopsy 13 months later diagnosed diffuse lymphoma, medium cell type (LSG)<sup>6</sup>.

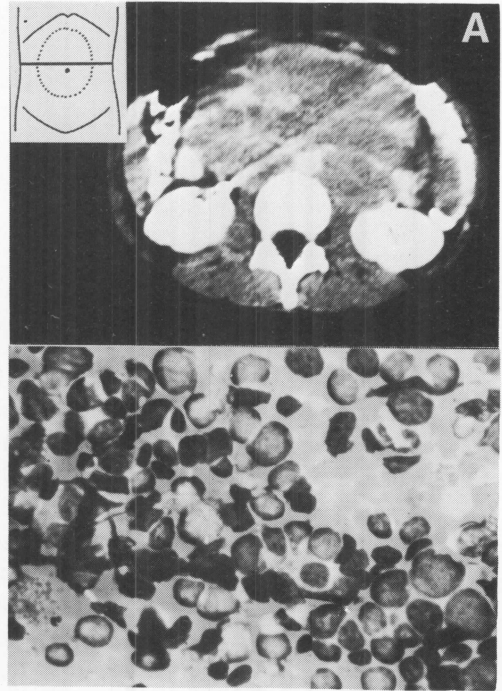


Fig. 2

#### Case 2

A 22-year-old woman. Splenomegaly of 2 fingers breadth below the left costal arch was palpated around the navel together with a hard, poorly delimited tumor of 30 cm long and 20 cm wide and with a smooth surface. FNAB identified many immature lymphocytes, and the case was diagnosed as lymphoma (Fig. 2A,B). Based on tissue sections extracted one month later for a therapeutic purpose the case was classified as diffuse lymphoma, mixed type (LSG).

#### Case 3

A 42-year-old woman. The patient underwent Hassab's operation 10 months before because of hepatocirrhotic esophageal varices. Since an induction of ping-pong ball size was palpated in the umbilical region during the follow-up in the dispensary, CT scan was performed. An homogenous mass was recognized in the periph-

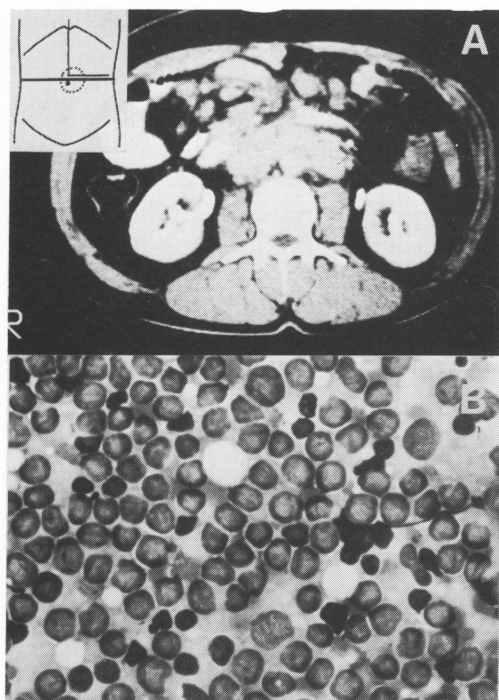


Fig. 3

ery of the aorta (Fig. 3A). FNAB identified many lymphoblasts of uniform size, and the mass was diagnosed as lymphoma (Fig. 3B). As a result of re-examination of previously resected spleen, it was classified as follicular lymphoma, medium cell type (LSG).

Case 4

A 67-year-old man. The patient presented no digestive symptoms such as abdominal pain, vomiting, constipation, etc. except complaining of a mobile, egg sized tumor around the navel. Since a tumoral unevenness was palpated from the corporal surface and an ununiform internal structure of the tumor was detected on CT, a malignant mesenteric tumor was suspected. Because of the observed many acinic formations (Fig. 4B) which were evident at a glance on FNAB, the tumor was judged as adenocarcinoma. There was found in operation a carcinoma mainly extravasally developed in the transverse colon. The resected specimen indicated a slight stenosis of the colon lumen.

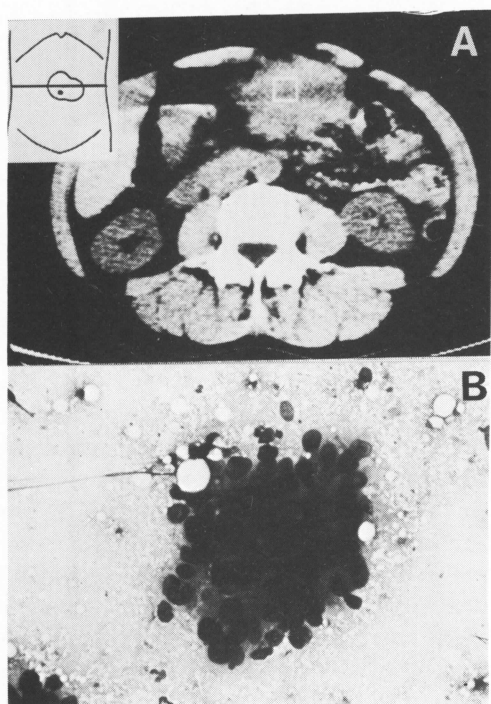


Fig. 4

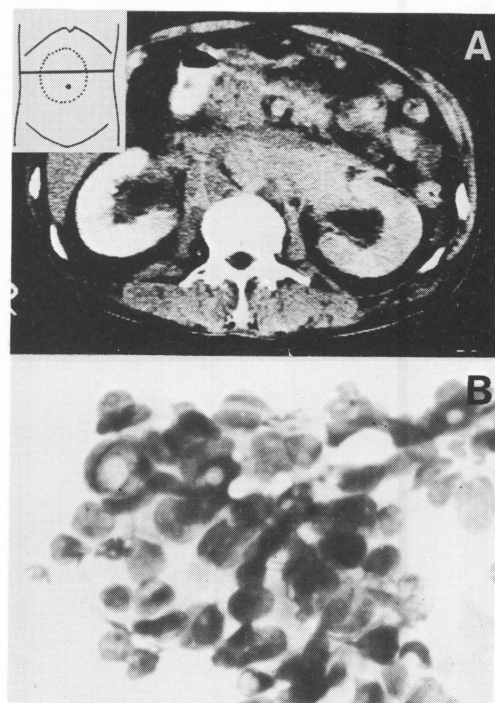


Fig. 5

## Case 5

A 67-year-old man. The patient principally complained of lumbar pain and general malaise. A hard protuberance of 20 cm × 20 cm was palpated around the navel, and a homogenous mass widely covering the retroperitoneum was detected on CT. An unclear acinic formations composed of large cells with scanty cytoplasm (Fig. 5B) was detected by FNAB and diagnosed as undifferentiated carcinoma. No operation was performed. Autopsy performed 4 months later revealed a II c-like carcinoma of 1 cm diameter in the posterior wall of the stomach, and there was obtained a finding that the carcinoma perpendicularly infiltrated into the pancreas and then continuously infiltrated into the whole retroperitoneum. A primary focus was thus identified as stomach.

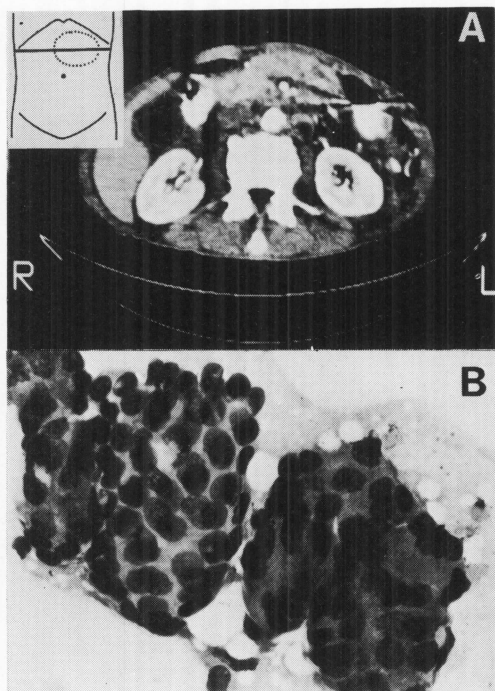


Fig. 6

## Case 6

A 66-year-old man. The patient mainly complained of abdominal pain and general malaise. A protuberant induration of 10 cm × 10 cm was palpated in the upper abdomen, and was revealed to be a retroperitoneal tumor by CT. A

cell cluster of an evident adenocarcinoma was detected by FNAB (Fig. 6B). Because of absent abnormality on X-ray fluorography of the alimentary tract, a primary pancreatic carcinoma was suspected. No operation was performed and the patient died 3 months later. Autopsy revealed a small pancreatic carcinoma of 15 mm in diameter in the pancreatic body, being same histological findings with the retroperitoneal tumor.

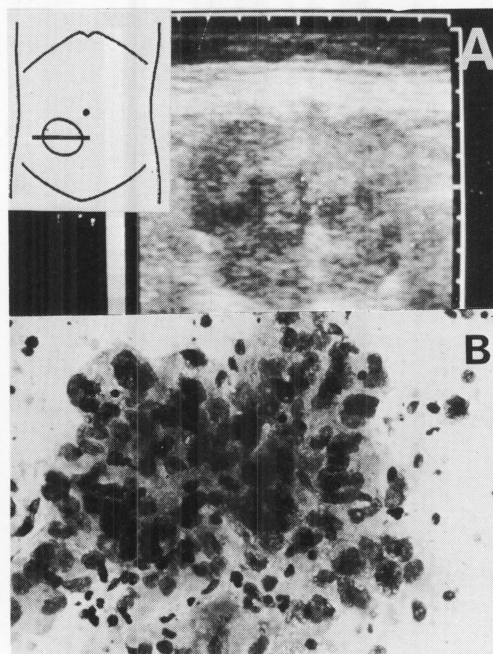


Fig. 7

## Case 7

A 62-year-old woman. Since a hard, spheroid mass, with a coarse surface, and of 9 cm in diameter was palpated in the ileocecum and also the ultrasonography revealed a complicated internal echo, FNAB was immediately performed. Acinar formations with extremely high polymorphism were identified and diagnosed as undifferentiated carcinoma (Fig. 7B). Operation indicated no relationship between tumor and any of the digestive organs, and neither uterus nor ovaria presented any abnormality on palpation. The histological examination revealed an undifferentiated carcinoma, and the primary focus could not be identified. Autopsy performed 2 year later revealed in the right ovary a finger-



head-sized clear cell carcinoma with the same histological structure as that of the tumor previously extirpated, which supposed that the initial tumor had been a primary ovarian origin.

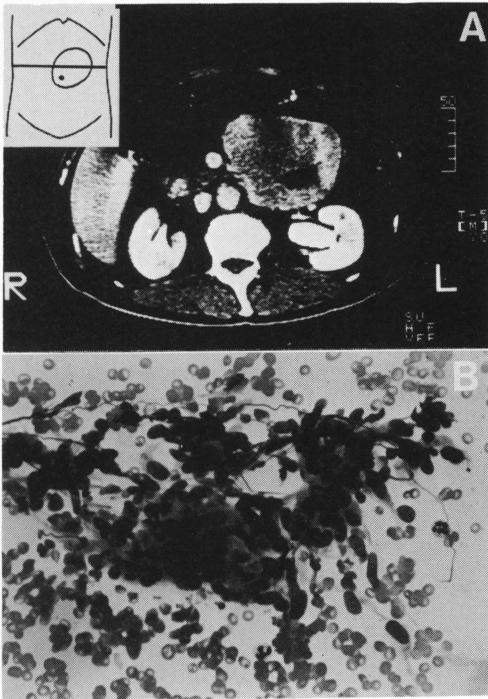


Fig. 8

#### Case 8

A 55-year-old man. The patient presented a mobile, spheroid mass of 10 cm in diameter rather on the left side of the navel. CT suspected a malignant tumor with heterogeneous internal structure and cyst. FNAB aspirated a number of cells with clear nucleolei and long-elliptic nuclei, leading to the diagnosis as leiomyosarcoma. The extirpated specimen had the same diagnosis.

#### Case 9

A 25-year-old man. The patient presented a mobile tumor with a smooth surface, of 12 cm × 10 cm rather on the right-inferior side of the navel. Because of heterogeneous internal structure on CT, it was supposed to be a malignant tumor of the sigmoid mesocolon. Since the tumor was abnormally hard, FNAB could only detect very few spindle cells (Fig. 9B). Although the tumor

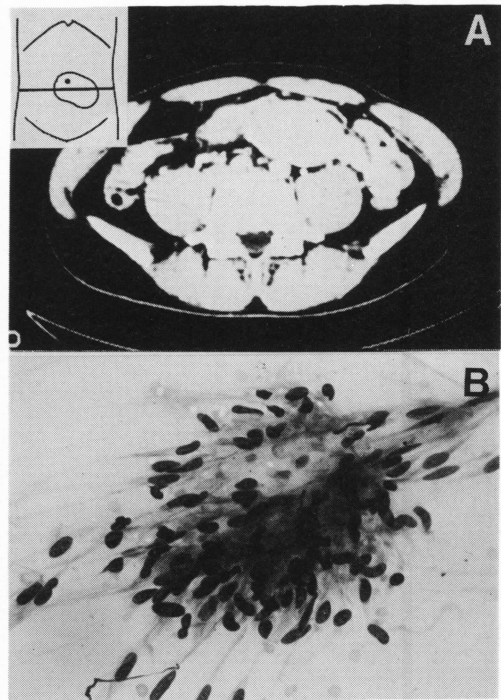


Fig. 9

was judged as leiomyoma because of high intercellular cohesiveness, the histological examination revealed many mitoses in the nuclei, leading to the diagnosis as leiomyosarcoma.

#### Case 10

A 35-year-old woman. The patient complained of abdominal distension and an unnatural soft protuberance in the right hypochondrium. Although gastrofluorography revealed a pressed image and filling defect in the greater curvature endoscopic biopsy detected normal gastric mucosa. CT revealed a image of mosaic tumor widely occupying the left subdiaphragmatic region (Fig. 10A). FNAB aspirated a number of spindle cells with high polymorphism (Fig. 10B), leading to be judged as leiomyosarcoma. Operation disclosed a soft fragil tumoral mass developing from the greater curvature side to the left-exterior side. Histological diagnosis was the same deribed from FNAB.

#### Case 11

A 53-year-old man. A child-head-sized non-pulsatile tumor was observed in the right-

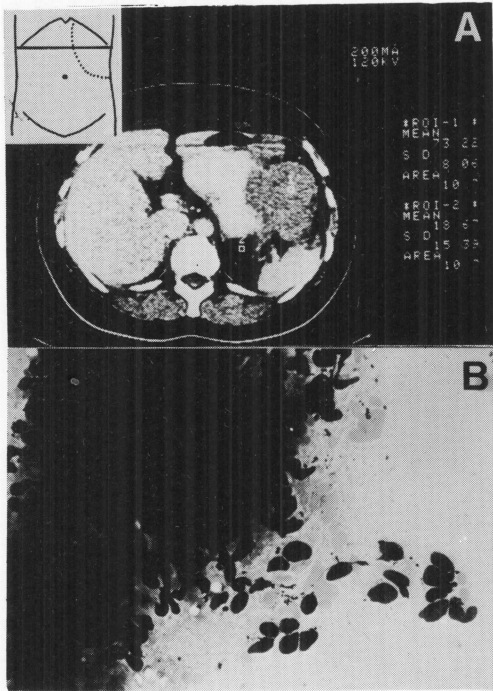


Fig. 10

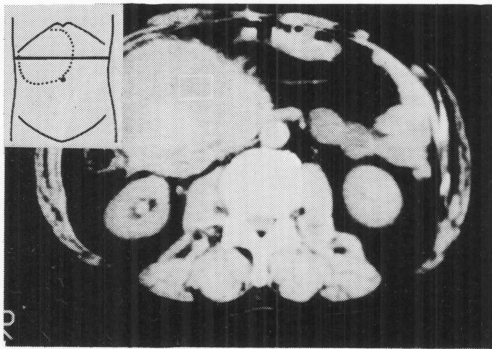


Fig. 11

superior abdominal region of the patient who was urgently hospitalized as acute abdomen. CT revealed that the tumor was in the retroperitoneum. FNAB detected red blood cells alone and identified a hematoma (Fig. 11). Digital subtraction angiography identified no aneurism, and it was diagnosed as idiopathic retroperitoneal hematoma. The hematoma was surgically removed.

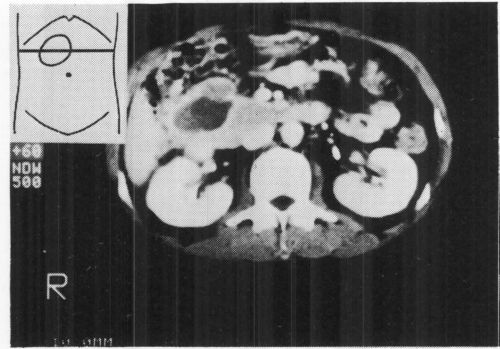


Fig. 12

#### Case 12

A 52-year-old man. The patient complained of a pain in the right-superior abdominal region, followed by the appearance of a fist-sized non-pulsatile tumor in the same region (Fig. 12). Following the identification of a hematoma with FNAB, selective visceral angiography was performed, and then we found an aneurysm of the colica media artery in the tumor. We surgically removed the aneurysm encountered in the hematoma.

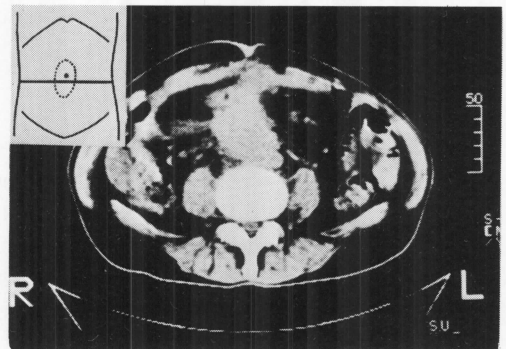


Fig. 13

#### Case 13

A 45-year-old man. The patient always presented a slight fever of about 37.5°. A prominent induration of 3 cm × 6 cm was palpated around the navel. Although CT suspected lymphoma (homogenous, irregular tumor was recognized from the aorta to the radix mesenteri; in Fig. 13), since FNAB detected only a small amount of altered fat tissue, it ended only in

denying lymphoma. Operation revealed a sclerotic lesion with highly inflammatory hypertrophy and some fat in the radix mesenterii, and the histological examination led to the diagnosis as tuberculoma.

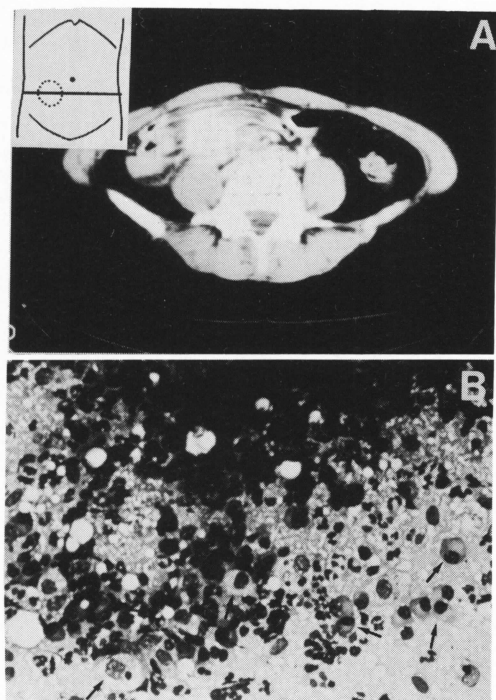


Fig. 14

#### Case 14

A 34-year-old woman. The patient visited the hospital complaining of a fever of about 37°C and painless egg-sized tumor in the ileocecal region. Since there were manifestations by which a heterogeneous internal structure was suspected to be malignant on CT (Fig. 14A), FNAB was performed. Smear detected a large amount of granuloma including a number of white blood cells and large histiocytes (Fig. 14B, the arrow), and it was diagnosed as an inflammatory tumor. Nonoperative antibiotic therapy was applied taking the patient's desire into account and the tumor was gradually reduced; it has completely disappeared at the present time after one year of the therapy.

### DISCUSSIONS

A nonoperative knowledge of sources and

characteristics of an abdominal tumor of uncertain origin is advantageous in the following two means: first of all, to comprehend not only the benignancy or malignancy of a tumor but also its concrete histological classification (whether it is a carcinoma, a lymphoma, a sarcoma, etc.) is an indispensable item for selecting the best therapy. Although FNAB gave a clear answer to 12 of 14 cases for which the authors hesitated to diagnose there were still 2 cases impossible for diagnosis. Case 9 was due to the fact that the case difficult to determine whether it was benign or malignant by FNAB<sup>8)</sup> was forced to judge from a small number of cells. Besides, case 13 was due to the fact that a central necrosis of the tumor was aspirated. As both Ferrici<sup>9)</sup> and Bree<sup>1)</sup> mentioned, it is a measure for improving a diagnostic rate not to mind performing a repuncture in case of insufficient materials obtained. Other merit of FNAB is the fact that an unnecessary operation is avoidable thanks thereto. In each of the cases from 4 to 7, cancer cells separated from their primary focus took an abnormal metastatic mode; in 2 cases of which operation was canceled as a result of FNAB. Besides, in case of case 14, it was evident from its clinical progress that it was an inflammatory tumor which did not need an operation. However, concerning lymphoma, the selection of a therapeutic method in accordance with detailed histopathological classifications is the recent tendency. CVP (cyclophosphamide, vincristine, prednisolone) therapy was being performed on each of cases 1 and 2. Since both cases were classified as intermediate grade malignancy according to working formulation<sup>7)</sup>, a therapy mainly with adriamycin ought to have been adopted from the beginning. Therefore, concerning lymphoma, role of FNAB in future consists in differentiating tumor from other lesions as early as possible, and the decision of a therapeutic method should be entrusted to open biopsy. The authors have so far performed more than 100 cases of abdominal puncture by means of FNAB besides this series, and no considerable trouble was observed. Although it is not that there is absolutely no possibility of seeding, (2) we are convinced that in future FNAB will receive an evaluation more and more appreciable as a simple diagnostic method with high cost effectiveness.

## REFERENCES

1. **Bree, R.L., Jafri, S.Z.H., Schwab, R.E., Farah, J., Bernacki, E.G. and Ellwood, R.A.** 1984. Abdominal fine needle aspiration biopsies with CT and ultrasound guidance: Techniques Result and clinical implications. *Computerized Radiol.* **8**: 9–15.
2. **Ferrici, J.T., Wittenberg, J., Margolies, M.N. and Carey, R.W.** 1979. malignant seeding of the tract after thin needle aspiration biopsy. *Radiology* **130**: 345–346.
3. **Ferrici, J.T., Wittenberg, J., Mueller, P.R., Simeone, J.F., Harbin, W.P., Kirkpatrick, R.H. and Taft, R.D.** 1980. Diagnosis of abdominal malignancy by radiologic fine needle aspiration biopsy *Am. J. Rentgenol.* **134**: 323–330.
4. **Fuji, Y., Matsuyama, T., Nakatsuka, H., Kawabori, K., Ichiba, Y., Tanaka, T., Kodama, O., Ezaki, H. and Dohi, K.** 1986. Differential diagnosis of space occupying lesions of the liver using aspiration biopsy cytology *Hiroshima-Igaku* **39**: 691–694.
5. **Matsuyama, T., Fuji, Y., Tanaka, T., Kodama, O. Ichiba, Y. and Dohi, K.** 1985. Diagnosis of the pancreas masses using ultrasonograph guided aspiration biopsy cytology. *Hiroshima-Igaku* **38**: 1273–1275. (in Japanese)
6. **Suchi, T., Tajima, K., Namba, K. and another thirteen members.** 1979. Some problems on the histopathological diagnosis of non-Hodgkin's malignant lymphoma: a proposal of a new type. *Acta Patholol. Jpn.* **29**: 755–776.
7. **The no Hodgkin's lymphoma pathologic classification project** 1982. National Cancer Institute sponsored study of classification of non Hodgkin's lymphomas: Summary and description of a working formulation for clinical usage. *Cancer* **49**: 2112–2135.
8. **Willems, J.S.** 1983. Clinical aspiration cytology, p. 319–347. *In* J.A. Linsk & S. Franzen (ed.), Philadelphia Lippincott.