Department of Pathology

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General Summary

The research projects of our department have focused on studies of the pathogenesis, histogenesis, morphogenesis, and clinical pathology of nonneoplastic and neoplastic human disease by means of light and electron microscopy, morphometry, immunohistochemistry, gene analysis, and other techniques.

Hepatology

On the basis of our previous studies, we have speculated that the restructuring process of the liver lobule from chronic hepatitis to liver cirrhosis represents a change from structural instability to structural stability. In other words, liver cirrhosis might represent self-organization of the liver according to the nonequilibrial thermodynamics of living systems.

Alcoholic liver cirrhosis was studied morphologically by means of the reconstruction of histologic serial sections. Changes in the arteries and lymphatic vessels were significant for the development of morphologic changes of this disease.

Morphologic changes of the liver with aging were studied by means of morphometrical analysis. The results show that the number of bile ducts decreases with aging.

Nephrology

We examined 287 cases of IgA nephropathy collected from hospitals nationwide. On the basis of the results of a statistical analysis of data with histologic variables, a new scale was established for grading the histologic severity of histopathological IgA nephropathy.

Histologic specimens of IgA nephropathy collected worldwide were examined by 18 nephropathologists belonging to the international committee of histological classification of IgA nephropathy. The aim was to establish a new histologic classification for IgA nephropathy.

Nineteen renal specimens obtained from pregnant women with hypertension were examined. The presence of thrombotic microangiopathy, focal glomerulosclerosis, and medullary ray damage indicated a close relation to renal vascular hypertension.

A study of transplanted kidneys revealed that medullary ray damage was caused mainly by urinary tract disorders and immmunosuppressants. Renal tissue with chronic rejection showed peritubular capillaritis and basement-membrane thickening. In addition, the number of endothelial cells positive for cavelion-1 increased. These findings

showed a close relation to the severity of chronic rejection.
We continued to histologically re-evaluate specimens of renal cell carcinoma collected in the department using revised general rules for clinical and pathological studies of renal cell carcinoma.
A total of 150 cases of hyperplasia, dysplasia, and adenoma of the renal tubules collected in the department were studied clinicopathologically.
Inflammatory pseudotumor of the kidney was examined. The pseudotumor was composed of granulomas with multinucleated giant cells and inflammatory granulation tissue with plasma cells, many of which showed immunoreactivity for IgG4. Fungi and anti-acid bacilli were also detected with special stains.

Gastrointestinal pathology
Risk factors for lymph node metastasis were examined in surgically resected specimens of superficial esophageal cancer. Specimens were immunohistochemically stained with D2-40. Lymphatic channels were identified. Multivariate statistical analysis showed that lymphatic invasion was closely related to lymph node metastasis.

Gynecological pathology
We performed a morphological study of ovarian aging involving histological investigation and microscopic measurement of 96 specimens of the ovary obtained at autopsy. The results showed that atrophy of the ovary begins at about age 30 years and progresses, especially after menopause. Atrophy of the ovary was caused mainly by volume reduction of the ovarian medulla.
A relation between ovarian atypical endometriosis and malignant ovarian tumor was examined, and cotyledenoid dissecting leiomyoma was studied clinicopathologically.

Urogenital pathology
We comprehensively reinvestigated the results of studies of prostatic carcinoma and published a review.

Lung pathology
Pathologic data obtained from 787 cases of primary lung cancer at autopsy were analyzed to examine the prevalence of lymph-node metastasis.
We are preparing to examine the epidermal growth factor receptor gene in specimens of lung cancer.

Other
Histologic evaluation was performed of specimens of various organs obtained from experimental animals to verify the safety of ultrasonography with phase-change nanodroplets. Four histologic stages were established according to the severity of injury induced by ultrasound.

Oncology
Loss of heterozygosity was studied in prostatic cancers of minimal size, of advanced

stage, and with metastasis.

Loss of heterogeneity was studied in liver cancer cells to detect candidate susceptibility inhibitor genes that play an important role in carcinogenesis, progression, and metastasis.

Publications

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