

Immunohistochemical study of the transplanted SAV-I cells into athymic nude mice

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SAV-I is a cell line, derived from a non-endocrine adenocarcinoma of the human duodenal Vater's papilla. In the previous study we have reported that the occurrence of neuroendocrine-like granules in the transplanted SAV-I cells. This study was done for elucidating the cellular characteristics of those cells containing neuroendocrine-like granules, by using the indirect immunoperoxidase or Avidin Biotin Affinity method. Light microscopically, the transplanted tumor revealed a combined adeno- and squamous cell carcinoma. Immunohistochemically, the tumor cells showed intense positive reaction against keratin, CEA, EMA and placental alkaline phosphatase. In addition, some tumor cells revealed immunoreactivity against EGC (Endocrine granule constituent) and bombesin. Only a small number of somatostatin immunoreactive cells were also demonstrated. In conclusion, our results of immunohistochemistry obtained here and the ultrastructural observations reported previously indicated that neuroendocrine differentiation, besides the original cellular characteristics of SAV-I cells as adenocarcinoma could be induced by heterotransplantation into athymic nude mice.

Changes in the metallothionein localization in the regenerating rat liver

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Metallothionein (MT) is a low-molecular-weight protein inducible under some physiologic conditions. Using the immunofluorescent technique, we have studied changes in MT localization in the regenerating rat liver. The time-course of MT concentration in the regenerating liver showed a rapid increase after partial hepatectomy, peaking its maximal level of 300 $\mu\text{g/g}$ liver at 24 hrs, followed by a marked decrease to a sham-control level at 30 hrs. On the other hand, MT levels remained fairly constant at 50-70 $\mu\text{g/g}$ liver in the sham-control during 30 hrs after the operation. Immunohistochemical finding in the regenerating liver was characterized by appearance of intense intranuclear stain of MT. The nuclear MT stain was detected at 12 hrs and thereafter whereas no nuclear stain was observed in the sham-control. In addition, the partial hepatectomy resulted in the appearance of MT in sinusoids and bile canaliculi at 24 hrs. The intensity of immunofluorescence was strongest at 24 hrs, which was consistent with the quantitative analysis by MT radioimmunoassay. The present results suggest that MT may play a role in the cellular proliferation.

Localization of metallothionein in female genital organs (uterus and ovary) and the mammary gland of the rat and guinea pig

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The synthesis of metallothionein (MT) is induced in response to not only heavy metals but also various endogenous factors including estrogen. The present study was carried out to study changes in contents and localization of MT in female reproductive organs from rats and guinea pigs using the immunofluorescent technique and MT radioimmunoassay. The MT levels in the uterus and ovary from rats were 27.1 ± 5.7 and 56.4 ± 8.6 $\mu\text{g/g}$ tissue, respectively. The epithelium of the uterine gland was found to contain strong immunofluorescence and the simple columnar epithelial cells had weak fluorescence. At the estrus nuclear stain of MT was more conspicuous because cytoplasmic MT which had a similar degree of fluorescence in other stages disappeared. In the ovary the presence of MT was observed in granulosa lutein cells and ova. Intense cytoplasmic and nuclear stain due to MT was found in alveolar cells and lactiferous epithelium of the mammary gland from guinea pigs. The present study not only shows for the first time the presence of MT in the female reproductive organs but also suggests regulation of MT induction by female sex hormones.

Ultracytochemical Studies on Dense Bodies in Hepatocytes of Phalloidin-treated Rats

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Independent of the development of fatty livers, the reaction products through our phospholipase-digestive methods were found sparsely in some biomembrane systems of rat hepatocytes. They were speculated to result from the digestion of phospholipids in some intracytoplasmic membrane systems with phospholipases (Acta histochem cytochem 21: 73, 1988). Chronic administration of phalloidin to rats resulted in a striking increase of microfilaments in the liver cells, mainly around bile canaliculi. Many electron-dense bodies were noticed in close relationship with microfilament-filled areas. The quality of them was investigated.

S. D. female rats weighing 250g were injected i.p. with phalloidin, 0.5mg/Kg, once daily for a week and sacrificed 1 day after the last injection. Small blocks of the hepatic tissue were fixed in a twice diluted Karnovsky's fixative containing 1% tannic acid overnight, washed and postfixed in 2% osmium buffer. Another liver was applied to our phospholipase A₂-digestive method.

The reaction products for the enzymatic digestion method were detected on the dense bodies. More dense lamellar structures were visualized after the tannic acid fixation. The body may contain more phospholipids.