Production of Group I Pepsinogen by Gastric Carcinoma

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KODAMA, M., TSUBURAYA, Y., KOYAMA, H., KOTANAGI, H., ISHIKAWA, K., NARISAWA, T., KOYAMA, K., YAMAGUCHI, T. and TAKAHASHI, T. Production of Group I Pepsinogen by Gastric Carcinoma. Tohoku J. exp. Med., 1986, 148 (2), 239-240 —— Group I pepsinogen levels were determined in the homogenized supernatant of the lymph nodes with metastasis of the gastric carcinoma by radioimmunoassay. Mean levels of group I pepsinogen were 941 ng/g and some of the lymph nodes showed very high levels compared with those of non-metastatic lymph nodes, 269 ng/g. They were also significantly higher than those of the sera in the same subjects, that is, the production of group I pepsinogen by gastric carcinoma was clarified. ——— group I pepsinogen; gastric carcinoma

It is generally accepted that the gastrointestinal carcinoma produces various proteins and some of them are available for clinical use as the tumor marker. This study was designed to elucidate whether group I pepsinogen found exclusively in the gastric mucosa (Samloff 1971) was produced also by gastric carcinoma cells.

MATERIALS AND METHODS

Thirty-five metastatic lymph nodes of gastric carcinoma and 5 control lymph nodes without metastasis were obtained at surgery. They were rinsed in cold 0.1 M phosphate buffer, pH 7.2 and were homogenized in 10-20% in the same buffer with a ground homogenizer. Each homogenate was centrifuged at 26,000 × g at 4°C for 30 min and the supernatants were pooled and stored at −20°C.

Group I pepsinogen levels of the supernatants were determined by Group I Pepsinogen Radioimmunoassay Kit (Cis Sorin, Green Cross Corp, Tokyo). The general scheme of the assay was that of a competitive binding, double antibody system. 125I-human group I pepsinogen and antiserum to human group I pepsinogen raised in rabbit were added to each sample with diluent buffer. They were mixed thoroughly using a mixer and were incubated overnight at room temperature. A precipitating reagent (anti-rabbit γ-globulin goat serum) was added and mixed thoroughly. After the incubation for 15 min at room temperature, they were centrifuged for 20 min at 3,000 rpm. The supernatants were decanted by aspiration and the radioactivity of the precipitates was counted by a gamma scintillation counter.

The sera of the 40 patients with gastric carcinoma were also prepared and the group I pepsinogen levels were determined by the same system.

Received October 24, 1985; accepted for publication December 5, 1985.
RESULTS

The mean value of group I pepsinogen of 35 metastatic lymph nodes were 941 ± 301 (s.e.) ng/g, while those of non-metastatic lymph nodes were 269 ± 76 ng/g. Group I pepsinogen concentrations of the metastatic lymph nodes were about 30 times higher than those of the sera. Tissue blood ratio of group I pepsinogen in 35 metastatic lymph nodes and 5 controls were shown in Fig. 1. They were classified according to the histological types of gastric carcinoma. The mean value of group I pepsinogen of any histological type was higher than that of the control. Twenty-five of 35 cases (71%) showed higher levels of group I pepsinogen than controls.

These results have clarified that some of gastric carcinomas produce group I pepsinogen and the present study suggests that group I pepsinogen could be a useful index of recurrence in total gastrectomized patients of gastric carcinoma.

Reference