

5. Compared Diagnostic Value of Immunoscintigraphy Using Monoclonal Antibodies Labeled with I-131 and In-111

J. F. CHATAL

Centre René Gauducheau, Nantes, France

To compare the diagnostic value of immunoscintigraphy using monoclonal antibodies labeled with I-131 and In-111, a first step consisted in studying the distribution of two antibodies, anti-CEA and OC 125 ($F(ab')_2$) labeled with I-131 and In-111, in patients operated on for colorectal and ovarian cancer.

Seven patients were injected with ^{131}I -anti-CEA 2 to 4 days before tumor resection. In a second randomised study, 4 patients were injected with ^{111}In -DTPA-anti-CEA and 4 patients with the same antibody associated with 10 mg of unlabeled anti-CEA 2 to 4 days before tumor resection. During surgery, specimens of tumor, normal colon, muscle, fat, skin, liver (in some patients) and blood were taken and their radioactivity counted. Results were expressed as a percentage of injected activity per gram and as tumor-to-tissue ratios. The antigenic expression of the same tumor specimens was assessed by an index defined by the percentage of immunostained cells weighted according to staining intensity (scored from 0 to $+++$). The results showed great variability, not allowing statistical conclusions to be drawn owing to the small number of patients studied and thus requiring due caution in interpretation. Tumor uptake with I-131 was approximately the same as with In-111 for an equally comparable antigenic expression of tumors. With 10 mg of unlabeled antibody, tumor uptake seemed more elevated; however, the tumors studied were richer in antigen. Tumor-to-tissue ratios

were higher with In-111, with the exception of the liver (15 for I-131, 0.5 for In-111).

The same protocol was applied to 2 patients injected with ^{131}I -OC 125 and in 7 patients injected with ^{111}In -DTPA-OC 125. Caution in interpretation was required owing to the same reasons as in the first study. Mean tumor uptake with In-111 was about 3 times as elevated as with I-131. Tumor-to-tissue ratios were also higher (except for the liver) with In-111.

In a second step, immunoscintigraphic results were compared in 9 patients successively injected with the same OC 125 antibody labeled with In-111 and I-131. To prevent the development of human anti-mouse immunoglobulin, which usually occurs one week after injection of mouse antibody, both injections (In-111 and I-131) were done within a 3-day interval. After injection of the same activity, the recording procedure was the same for both radionuclides, consisting in SPECT imaging on the third day immediately followed by planar imaging (anterior and posterior abdominal views). Seven tumor sites were documented in the 9 patients. Four were visualized with I-131, including 1 abdominal and 3 pelvic. Six were visualized with In-111, including 2 abdominal and 4 pelvic. The interpretation of the images was easier with In-111 due to relatively good tumor-to-abdominal-background ratio than with I-131 for which the background was characterized by a patchy, inhomogeneous distribution.

6. Immunoscintigraphy: alphafetoprotein と thyroglobulin

和泉 元衛, 石井 伸子, 小路 敏彦, 長瀧 重信
長崎大学第一内科

Alpha-fetoprotein (AFP) は肝癌の腫瘍マーカーであるが、Thyroglobulin (Tg) は種々の甲状腺疾患で血中に増加し、甲状腺癌に特異的でなく、この点、Tg は真の腫瘍マーカーではない。しかしながら、血中 Tg は甲状腺癌の治癒、再発の判定に有用である。

われわれの教室では AFP, Tg に対する抗体を用いて、Immunoscintigraphy の研究、開発を行ってきた。そこで、これまでのデータを標識抗体が腫瘍に集積する機序にそってまとめて報告する。

まず、AFP や Tg の抗原が血中に多量分泌されてい