separated through a sephadex-G75 column and repurified through G-200 column before assay. Specific radioactivity of the labeled ferritin ranged from 0.3 to 0.4 mCi/mg. We adopted the double antibody system as the assay procedure. All dilutions were made with 1/15M phosphate buffered saline, pH 7.5, congaining 1% bovine serum albumin (1% BSA-PBS). One hundred μl of serum sample or standard ferritin was added to 100 μl of anti-human liver ferritin (1 : 8000) and 500 μl of buffer. Then, ^{125}I-labeled ferritin (10,000 cpm = 20 ng) was added. The solutions were mixed and incubated at 4°C for 48 hours. One hundred μl of the normal rabbit serum (1:50) and 100 μl of the second antibody (1 : 10) were added to the solutions, followed by incubation at 4°C for 24 hours.

The above assay conditions appeared the best. Then, the total and precipitated counts were measured by a Packard auto-γ-counter. The standard ferritin was diluted in both the 1% BSA-PBS and ferritin-free human serum. The ferritin-free serum was produced by sepharose 4B affinity chromatography, using the anti-ferritin rabbit serum. The standard curves in these diluents were almost the same. The ferritin-free human serum protein did not interfere with the assay system. Using this, we measured the ferritin concentration in normal human serum.

The minimal ferritin amount detectable by this assay method was 31 ng/m*l*. The mean concentration of ferritin in normal human serum was 135 ng/m*l* for male (36 samples), and 80 ng/m*l* for female (30 samples).

a-Fetoprotein Measurements in Brain Tumors

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The result of the measurement of α-fetoprotein (AFP) by radioimmunoassay (RIA) and hemaglutination on 34 brain tumors was reported. Preliminary experiments with the α-feto-RIA kit testing dilution curve, recovery test and reproducibility were satisfactory. The data obtained by the hemaglutination method on 15 cases of brain tumor were all negative (below 200 ng/m*l*).

Brain tumors were divided into two groups, a glioma group (16 cases), and a non-glioma group (18). The former contained glioblastoma multiforme (5 cases), astrocytoma (5), oligodendroglioma (1), medulloblastoma (1) and pinealoma (4); the latter, meningioma (9), pituitary adenoma (4), acoustic neurinoma (1), craniopharyngioma (1), hemangioblastoma (1) and metastatic tumor (2). Although the AFP values above 20 ng/m*l* were considered as positive according to the reports made by others, the AFP values did not exceed 20 ng/m*l* in our cases.

In glioma group, 2 out of 5 glioblastomas and one out of 5 astrocytomas showed the AFP values above 9 ng/m*l*, while those of 19 normal adults represented the mean plus 2 sigma measured.

In non-glioma group, one out of 9 meningiomas and 3 out of 4 pituitary adenomas showed the AFP values above 9 ng/m*l*.

(Results)

The mean AFP values were 4.6 ± 4.82 ng/m*l* in glioma group, 5.1 ± 4.37 ng/m*l* in non-glioma group. Neither of these values was significantly different from the mean AFP value in normal adults 3.3 ± 2.68 ng/m*l*.

(Conclusion)

Recently there is a paper, suggesting a possibility of glioma and embryonal carcinoma producing AFP, because of high AFP values were frequently measured not only on glioma or embryonal carcinoma but also on the tissue or content of the cyst of such glioblastomas. Our data, however, showed no positive AFP values even with a much higher sensitive RIA method. Our study indicates that the clinical usefulness and significance in measuring of serum AFP in brain tumor are disappointing.