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Letter to the Editor

Failure to Demonstrate Pregnancy-specific Beta-1-glycoprotein in Serum, Cerebrospinal Fluid and Tumor Tissue in Neurosurgical Patients*

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PREGNANCY-SPECIFIC beta-1-glycoprotein (SP1) is produced by the human placenta and is normally present in maternal and fetal serum and amniotic fluid, the concentrations increasing during pregnancy [1]. Clinical applications have been suggested, e.g. in the area of detection of pregnancy, complications of early pregnancy and prenatal diagnosis [2–4]. SP1 is also found in tissue and serum of choriocarcinoma patients in most cases [5].

We have earlier reported that cells derived from normal and malignant brain tissue can synthesize SP1 at least *in vitro* [6], and that human cerebrospinal fluid (CSF) contains SP1-like material in small concentrations [7]. Although the presence of SP1 in serum of patients with non-trophoblastic tumors is controversial [8], it has been found, using immunohistochemical methods, in neoplasms of the mammary gland and the gastrointestinal tract [9]. So far, there is no information on SP1 in association with brain tumours. In this communication we study the possible expression of SP1 in serum, CSF and tissue of patients with brain tumors and with other brain diseases which have led to a neurosurgical operation.

Serum and CSF was collected from a total of 26 patients admitted to the Department of Neurosurgery, University of Helsinki. CSF was drawn at the time of the operation intraventricularly, or from the subarachnoidal space, and serum was collected on the operation day and in some cases also on the day after the operation. Thirty-two CSF and 19 serum samples were obtained. The diagnoses of the patients in the series are presented in Table 1. The patients included 24 adults (10 females and 14 males) with a mean age of 48 yr (range 23–73 yr), and 2 children aged 3 and 9 yr. SP1 radioimmunoassay was performed as described previously [10], the sensitivity of the test being 1 ng/ml. In this work the value given by 10 male sera or CSF + 2 S.D. was kept as a cut-off level: this level was 3.5 ng/ml for both serum and CSF.

Paraffin-embedded sections from 7 brain tumors from the same patients (see Table 1) were also studied for tissue SP1 by the immunoperoxidase method using both rabbit immune serum and mouse monoclonal antibodies, as described previously [11]. Normal brain tissue was also studied from 7 patients.

Only one serum sample, originating from a 53-yr-old woman with cerebral atrophy of unknown reason, showed an SP1 value above the cut-off level (the value was 5.6 ng/ml) on operation day, but the sample taken the following day had less than 3.5 ng/ml SP1 activity. All the other serum samples and all CSF samples had SP1 concentrations below the cut-off level. SP1 was not found in any of the normal or malignant brain tissue sections studied.

The SP1 level was not elevated in CSF or serum

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Table 1. Patients studied for serum and CSF SP1

Diagnosis	No. of patients	No. of samples Serum	CSF
Astrocytoma	2	2	2
Glioblastoma	2	1	2
Medulloblastoma	1	1	1
Meningeoma	1	2	-
Neurinoma	1	-	1
Oligodendroglioma	1	1	1
H.C.* after removal and irradiation of pinealoma	1	1	1
Atrofia cerebri	6	5	9
Arteriovenous malformation	3	2	3
Stenosis of the aqueduct	2	1	4
Normal pressure H.C.	3	2	3
H.C. NUD	2	1	3
Osteodysplasia polycystica congenita cum encephalopathia	1	-	2

*H.C. = hydrocephalus.

of patients with brain tumors or other brain diseases. Also, the tissue localization studies gave a negative result. Thus the placental protein SP1 is not expressed in this group of patients with non-trophoblastic tumors. The 'elevation' of SP1 in the 1 patient was marginal and has no clinical importance. In addition, the SP1 level in the other 5 patients with the same diagnosis was normal.

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