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BIOCHEMICAL FINDINGS IN HUMAN BRAIN TUMORS

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Malignant brain tumors are highly resistant to therapy. Cell proliferation and its connection to metabolic processes may be important with respect to therapeutic responses. Therefore studies were performed in this field. We have investigated the energy metabolism of 11 glioblastomas,9 meningeomas, 5 metastases and 5 other tumors using conventional biochemical methods and HPLC. We determined glycolytic enzymes (hexokinase, glucokinase, glucose-6-phosphatase, LDH) as well as levels of glucose, lactate and adenine nucleotides. The metabolic parameters showed great differences intra-and intertumorally. The phosphorylation of glucose was higher than the dephosphorylation in all tumors; the LDH level was higher in malignant tumors and in large meningeomas than in benignant tumors. We could prove that there are large variations in the energy metabolism of brain tumors.

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GBM: A REVIEW OF 118 PATIENTS

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Between January 1979 and December 1991,118 patients with GBM were treated according to any of several protocols used in studies by the Istituto C.Besta and the Department of Radiotherapy Niguarda Cà Granda,Milan. The data evalueted were age, KPS, survival and therapy. Cox proportional hasards analysis was used to examine the effect of specific variables on survival. The method of Kaplan-Meyer was used to estimate median survival.Patient median, KPS score was 80%, the overall median survival was 13.5 months. The exten of surgery, KPS and salvage therapy had a significant influence on survival. The lenght of survival is directly associated with the number of protocols.

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MODULATION OF PHOTORECEPTOR AND NEURAL MARKER EXPRESSION BY cAMP AND LAMININ IN RETINOBLASTOMA CELLS

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Retinoblastoma cells are derived from primitive pluripotent cells of the neural retina. The human Rb cell line Y-79 grows in suspension culture, however these cells can be induced to attach to a substratum coated with polylysine (PL), where they assume a photoreceptor-like morphology and express the photoreceptor-specific interphotoreceptor-retinoid-binding protein (IRBP) mRNA in abundance. In contrast cells in suspension culture exhibit a much lower IRBP message level. Laminin (LN), a basement membrane component, affects the differentiation of Y-79 cells in culture through an adhesion independent mechanism. LN does not act as an attachment substrate for these cells, yet when added to the medium it alters Y-79 cell differentiation on PL from a photoreceptor-like to a conventional neuron-like phenotype. The production of IRBP mRNA is reduced, while the expression of Neurofilament (NF) and Neuron Specific Enolase (NSE) is enhanced. In contrast, when LN is added to suspension cultures the expression of IRBP mRNA is enhanced by 60%. Dibutyryl cAMP (dbcAMP) also affects Y-79 cells differentiation. When dbcAMP is added to Y-79 cells grown on PL in serum-containing medium, these cells differentiate into a Müller-glial-like phenotype. This is acompanied by a decrease in IRBP mRNA level and in NF and NSE expression, whereas Glial Fibrillic Acidic Protein (GFAP) production is induced. However, if the cells are first treated with LN and then dbcAMP, the cells express a conventional neuronal-like phenotype as with LN alone. In contrast, LN and dbcAMP treatment of Y-79 suspension cultures causes a 3 fold increase in IRBP mRNA level over that of untreated cells in suspension. Thus, laminin and dbcAMP have a potent differentiative effect on retinoblastoma cells *in vitro*. Moreover, these effects are dramatically altered by attachment.

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Radiotherapy of CNS tumours in children in the experience of Centre of Oncology, Warsaw

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From 1.01.1980 till 31.12.1992 452 children with central nervous system tumours were treated in the First Radiotherapy Department, Centre of Oncology,Poland. Four hundred twenty eight children had intracranial tumours, 21 spinal cord and 3 generalized tumour in both sites. Histopathological diagnosis was confirmed in 345 cases /119 astrocytoma,69 medulloblastoma,67 ependymoma,30 craniopharyngioma and 60 others/. In remaining 107 diagnosis was estabilished with CT and MRI. All children were treated with megavoltage, with individual immobilization system and RT planning programme. In 42 children with brain stem tumours hyperfractionated RT was applied.The tolerance of treatment was good in 80% patients.Ninety five percent patients improved or remained in stable state.Up to end of 1990 303 children were treated, 179 /59%/ of them are living and 150 /50%/ with no evidence of recurrence, from 2 to 12 years after completing the treatment. The clinical state of 130 /72%/ children is good or very good, they have normal school and social life.

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COMBINED POSTOPERATIVE RADIOTHERAPY AND PVC-CHEMOTHERAPY (PROCARBAZINE, CCNU AND VINCRISTINE) IN MANAGING ANAPLASTIC ASTROCYTOMA - A LONG-TERM FOLLOW-UP

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14 patients with histologically confirmed anaplastic Astrocytoma were retrospectively analyzed. They were treated according to the Protocol by a combination of modalities: Surgery, Radiotherapy and PVC Chemotherapy. All patients included have Karnofski P.S. greater than 50%, an estimated life expectancy of at least 8 weeks, adequate hematological, renal and hepatic functions. There were 4 C.R. and 6 P.R. after the completion of the combined therapeutic regimen. Median duration of response was 17 months with a DFS at 24 months of 42% and DFS at 60 months of 24%. Overall median survival was 33 months (range 2 - 95 months).
O.S. and DFS were influenced by age (<40 - $p = 0.05$ and $p = 0.05$ respectively) by Karnofski P.S. ($>70\%$ $p = 0.05$) Patients who received more than 6 courses of chemotherapy had significantly longer survival ($p = 0.03$). The time to progression was not influenced by the number of courses ($p = 0.09$ N.S.)

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THE MANAGEMENT OF HISTOLOGICALLY UNVERIFIED PRESUMED CEREBRAL GLIOMAS WITH RADIOTHERAPY

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111 adults with histologically unverified presumed cerebral glioma were treated with radiotherapy between 1974 and 1990. Using CT or MRI criteria alone 41 of these tumours were presumed low grade, 63 high grade and 7 unclassified. The 5 year survival probability of the whole cohort was 31%. Age, performance status and the degree of contrast enhancement were independent prognostic factors for survival. Patients with presumed low grade glioma had a 5 year survival of 41%. Survival results were compared to a cohort of 82 adults with histologically verified low grade glioma treated over the same period with surgery and radiotherapy. In both groups age, performance status and the degree of contrast enhancement were also independent prognostic factors for survival. After correction for prognostic factors no significant difference was found in the survival between patients with verified and unverified low grade glioma. 1 of 15 cases with subsequent histology, obtained at autopsy or salvage surgery, had nonglial pathology. We conclude that patients diagnosed on the basis of clinical features and imaging as having presumed glioma have similar natural history and clinical behaviour after treatment with radiotherapy to those histologically confirmed gliomas. However, the results should not be taken as justification for avoiding biopsy, A proportion of patients have nonglial pathology and new more effective treatment strategies for patients with glial tumours can only evolve on the basis of full diagnostic information including pathology.