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Optimal Therapy in Medulloblastoma

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With 5 Figures

Summary

Twenty-eight children with medulloblastoma (19 boys and 9 girls) were treated at the Departments of Neurosurgery and Radiotherapy in Essen between 1969 and 1977, and were followed prospectively after surgical treatment and postoperative irradiation. Because different radiation techniques had been used, these patients were divided into two groups, one given a limited irradiation volume and the other irradiation of the entire central nervous system. The results obtained in the former group were inferior to those in the latter. All living patients in the second group are in good condition. Special attention is paid to the technique of irradiation and the factors which may influence prognosis. Even after the relatively short follow up period of one to five years, it may be concluded that high-dose irradiation of the entire central nervous system considerably improved the prognosis of medulloblastoma.

Keywords: Medulloblastoma; Prognosis; Radiotherapy.

Introduction

Cerebellar medulloblastomas account for approximately one-fifth of all primary intracranial tumours in children. Since the first description of medulloblastoma as an independent entity by Bailey and Cushing, many reports on different modes of therapy have been published. It is well known that medulloblastomas are highly radiosensitive and have a tendency to spread via the cerebrospinal fluid to the subarachnoid and ventricular spaces. The previously poor prognosis of children with this tumour led us to develop a combined neurosurgical and radiotherapeutic scheme of treatment. The results obtained with this treatment are presented in this paper.
Material and Methods

Between 1969 and 1977, 28 patients younger than 16 years of age and suffering from medulloblastoma were treated in the Departments of Neurosurgery and Radiotherapy in Essen. Because different radiation techniques were applied, these patients were divided into two groups. The first group of 12 patients was treated between 1969 and 1973; the second group, consisted of 16 patients, was treated between 1974 and 1977. There were 19 male and 9 female children in this series.

Clinical Features

Twenty-five of the patients (90 per cent) were admitted with complaints of less than three months duration. Headache, vomiting, and vertigo were the first complaints in all but three cases. Two patients complained of ataxia and one of drop attacks. Papilloedema was found in 17 patients and disturbed synergia in 17 patients. Other symptoms were cranial nerve palsy, reflex disturbances, inertia, speech disorders, and impaired memory.

Diagnosis

Computerized axial tomography is of superior value for the demonstration of posterior fossa tumours. In all patients investigated with this method the tumour could be visualized, whereas pneumencephalography or ventriculography, carried out in 25 cases, showed normal findings in two patients. Radionuclide brain scanning was performed on 17 patients, eight of whom showed negative results. However, routine investigations such as plain skull films, electroencephalography, and cerebrospinal fluid cytology also provide valuable information.

Treatment

Total tumour removal was carried out in fifteen patients, subtotal extirpation in seven patients, partial removal in five, and a biopsy in one patient. The purpose of the operation was to remove as much tumour tissue as possible without increasing the neurological deficit and to reestablish a free flow of cerebrospinal fluid through the posterior fossa. In almost all cases a shunt was necessary in order to prevent the development of an occlusive hydrocephalus due to local tumour recurrence or brain oedema during radiotherapy. After the surgical treatment all patients were submitted to radiotherapy as soon as possible.

Radiotherapy

The choice of radiation technique is determined by the available photon and electron beams. In general, the whole brain is irradiated