ABSTRACT

Childs Nerv Syst. 2022 Mar 15. doi: 10.1007/s00381-022-05463-1. Online ahead of print.

Gamma knife radiosurgery as an efficacious treatment for paediatric central nervous system tumours: a retrospective study of 61 neoplasms.

Mishra H(1), Pahwa B(2), Agrawal D(3), M Ch MS(4), M Ch SSK(4).

Author information:
(1)Consultant Neurosurgeon, We Care Hospital, Raipur, Chhattisgarh, India.
(2)University College of Medical Sciences and GTB Hospital, Delhi, India.
(3)Department of Neurosurgery, JPNA Trauma Center, All India Institute of Medical Sciences, New Delhi, 110029, India. drdeepak@gmail.com.
(4)Department of Neurosurgery, JPNA Trauma Center, All India Institute of Medical Sciences, New Delhi, 110029, India.

PURPOSE: Brain tumours have an incidence of 1.15 to 5.14 cases per 100,000 children and are associated with significant morbidity and mortality. Radiosurgery has become a promising approach to manage these paediatric CNS tumours. The aim of the present study was to analyse the efficacy of radiosurgery in the treatment of a variety of paediatric tumours of CNS.

METHODS: This retrospective study was conducted from 1997 to 2012 at a single Neurosurgery centre. All paediatric patients (≤ 18 years of age) with CNS tumours who were treated with gamma knife radiosurgery (GKRS) and had a minimum follow up of 6 months were included in the study. Patients with lesions other than tumours were excluded. Clinical, radiological and GKRS planning data was collected and analysed in all patients.

RESULTS: A total of 76 children with brain tumours had GKRS during the study period. Of these, 40 children (with 61 neoplasms) had follow-up available and were included in the study. The mean age was 16 years (6-18 years). Seventeen patients received primary GKRS, 20 patients received secondary, and 3 patients received both. The median tumour volume was 3.3 cm3 (0.14-38.9 cm3). The mean dose was 12.56 Gy at 50% isodose line. The majority of the tumours were meningioma (n = 20) followed by acoustic schwannoma (n = 17). The mean treatment time was 67.04 min. Thirty-three tumours responded favourably to GKRS, 24 showed a stable size, 3 had no response while 1 progressed, requiring surgery.

CONCLUSION: GKRS has the potential to become an indispensable tool in the management of paediatric brain neoplasms.

DOI: 10.1007/s00381-022-05463-1
PMID: 35290486