IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 22, Issue 1 Ser.10 (January. 2023), PP 20-23
www.iosrjournals.org

Case Report

DR. K.P.Ramakrishnan [1 *]
Dr. Chintha Sanjeevakumari[2] ,
Dr. Bukya Sheela[3]

Corresponding author: Dr. K . P. Ramakrishnan

Date of Submission: 12-01-2023 Date of Acceptance: 28-01-2023

I. Introduction:

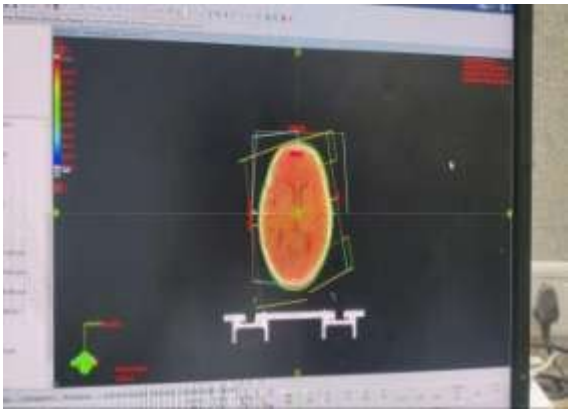
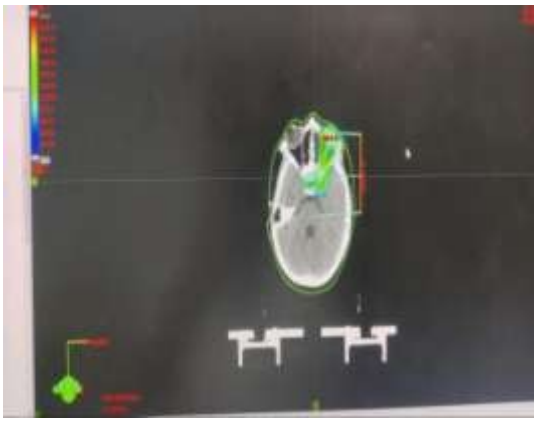
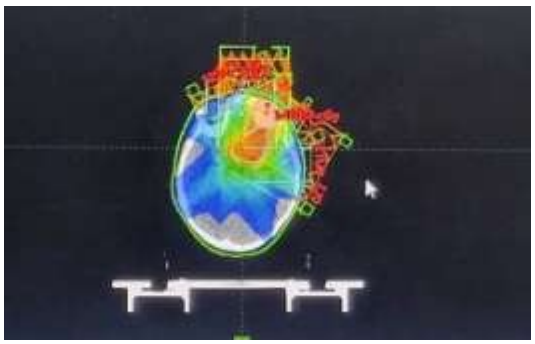
Retinoblastoma is the most common intraocular tumor of childhood .Extraocular retinoblastoma is rarely encountered in developing countries as the patients tend to come in advanced stages, we encounter retinoblastoma in the last stages.(1).Adjuvant radiotherapy and chemotherapy are frequently considered for high risk cases in order to decrease the risk of extraocular relapse; however, current evidence has mostly been derived from relatively small retrospective or prospective studies with nonuniform inclusion criteria and treatment protocols.Optimal therapeutic strategies for extraocular retinoblastoma have not yet been defined and prognosis continues to be dismal in most cases. Extraocular relapses and cerebrospinal metastasis represent a therapeutic challenge as they are often associated with poor outcomes despite ag aggressive measures (3). However, outcomes have improved in recent years with aggressive and novel treatment approaches

II. Case Summary:

A known case of left eye retinoblastoma group E , presented to our hospital post 5 cycles of VEC last cycle was on 15/6/2022.INJ vincristine 0.8mg ,inj carboplatin 150mg, inj etoposide 85mg. The patient developed multiple episodes of seizure after the last cycle.initial clinical findings were conjunctiva congested leukocoria present , focal neovascularization of iris at 5'o'clock .On fundus examination endophytic mass occupying more than 75% of vitreous cavity. The intraocular pressure was 12mmhg. The patient came to OP with ecog score 3, patient had multiple episodes of seizure. Patient was admitted to the ICU .The patient was unconscious and responding to commands.

MRI BRAIN**:** Extensive leptomeningeal infiltrating disease seen involving both supra and infratentorial region maximum site of involvement is cerebellar lobes.

Extensive cytotoxic edema seen in cerebellar lobes and right parieto occipital regions. The left eye is showing residual tumor with hemorrhage. Diffuse altered signal intensity seen in the intraconal part of the left optic nerve and proximally till the intracranial part of the optic nerve. Meningeal enhancement seen surrounding the optic nerve. The patient was kept on antiepileptic medication and anti edematic medication. MRI spine was done to rule out the involvement of the spinal canal. MRI spine came out to be normal.CSF cytology was negative. The patient was planned for palliative RT (whole brain rt)with german helmet technique and boost to the local disease. 36Gy 1.8Gy /# 20# was given followed by a boost to the local disease. 14.4 Gy 1.8Gy/# 8#was given

The clinical target volume included entire brain and meninges up to c 1 vertebra and left orbit.Ctv boost included the local disease plus 5 mm margins
2 coplanar fields were to plan the 36Gy plan . 7 fields including 2 non coplanar fields were to used to plan the local boost. Field shaping was done using multileaf collimators. The prescription isodose line was selected as such 95% of PTV receives 95% of dose.CSI was not considered as the MRI spine was normal and csf was foundto be negative . The whole brain RT with local boost was given. The patient had drastic improvement in the general condition. The patient started responding to commands and started taking oral foods.Patient was discharged after completion of RT. OAR constraint achieved was eyeball mean dose was 29 Gy. The lens maximum dose was 9Gy.

III. Discussion:

Currently, chemotherapy is being used extensively in high risk retinoblastoma cases with the aim of tumor reduction and control of distant metastasis. High risk features for relapse include optic nerve invasion beyond lamina cribrosa,choroid invasion > 2mm, invasion of sclera, anterior chamber, or orbit (4). Honavar et al. demonstrated a reduction in the rate of metastasis from 24% to 4% with adjuvant chemotherapy given for four to six months (2). Complete responses are rare in metastatic retinoblastoma with chemotherapy alone. Most chemotherapeutic agents also have limited penetrability into the central nervous system. Currently,the standard therapy for retinoblastoma with cerebrospinal metastasis is systemic and intrathecal chemotherapy with cranial irradiation.

Despite five cycles of chemotherapy there was a progressive disease with multiple seizures and general condition getting worse. There were few studies regarding craniospinal irradiation in ithe management of retinoblastoma but since the patients had negative csf cytology for malignant cells we went ahead with whole brain RT with local boost**.Pratt, C. B. (5)** reported a case of a 3.5 year old boy with orbital and central nervous system extension of unilateral retinoblastoma with CSF metastasis treated with intravenous cyclophosphamide and doxorubicin with intrathecal methotrexate followed by craniospinal irradiation. Although complete shrinkage of the orbital tumor and intracranial metastasis occurred following chemotherapy, malignant cells persisted in the CSF prior to and six weeks following craniospinal irradiation. **Lee, C. T.**

(6) et al. compared treatment planning with 3D-CRT, IMRT, and protons for pediatric tumors, including retinoblastomas and medulloblastomas, and found that protons had the advantage of maximally sparing normal tissues followed by IMRT.

Limited availability of proton therapy facilities precludes its extensive use and currently IMRT seems to be the most feasible strategy for protecting normal tissues

In a study of I-125 brachytherapy in post enucleation orbits where children with tumors at the resection line of the optic nerve also received craniospinal irradiation, none of the patients with gross extraocular extension or metastasis were long term survivors (7). Marks, L. B. et al. (8) reported a case of craniospinal irradiation for trilateral retinoblastoma following orbital irradiation. The patient was treated with 3-dimensional conformal radiotherapy to match previously irradiated areas along with a 3-field pineal boost. Nelson et al. (9) reported successful therapy of trilateral retinoblastoma in three cases one of which received craniospinal irradiation and was subsequently disease free 12 months following treatment.

Gimblett, M. L. et al. (10) have reported the case of a 28-month-old male with retinoblastoma who underwent enucleation, and was detected to have micrometastasis in the CSF sample taken during surgery. The patient received intrathecal and intravenous chemotherapy with cranial radiotherapy, and was alive and well four years later. In a prospective study using dose intensive carboplatin, etoposide, vincristine, cyclophosphamide, and idarubicin for retinoblastoma with high risk features or metastasis, of the six patients with metastatic disease, only one patient with lymph node only metastasis had long term survival (11). In a retrospective analysis from the Children's' Hospital, Los Angeles, none of the patients with direct extension into the central nervous system or distant metastatic disease survived (3). A 7-year-old girl with recurrent retinoblastoma with CNS metastasis received 60 mg/m2 tamoxifen in addition to chemotherapy and CNS radiotherapy (12). She was in remission until she died in a traffic accident at week 114. Antonelli, C. B. et al. (13) reported their 13 year experience with extraocular retinoblastoma in Brazil and found that patients with dissemination to the central nervous system or metastatic disease remain incurable and die of progressive disease, despite the aggressive treatment. Similarly, Chantada, G. et al. (14) in a retrospective review of treatment of overt extraocular retinoblastoma also found that among the 26 patients with distant metastasis none survived five years. Another study utilizing high dose chemotherapy with haematopoietic stem cell rescue for high risk retinoblastoma also failed to improve the outcome of patients with metastatic disease (15). Schvartzman, E. et al.(16) treated patients with CSF metastasis with vincristine, doxorubicin, cyclophosphamide, cisplatin, and etoposide along with intrathecal therapy and craniospinal RT but failed to document any improved survival.

References:

[1]. Shields, C. A., Shields, J. A. Diagnosis and Management of Retinoblastoma. Cancer Control 11, 317-327 (2004).

[2]. Honavar, S. G., Singh, A. D., Shields, C. L., Meadows, A. T., Demirci, H., Cater, J., Shields, J. A. Post Enucleation Adjuvant Therapy inHigh Risk Retinoblastoma. Arch. Ophthalmol. 120, 923-931 (2002).

[3]. Jubran, R. F., Erdreich-Epstein, A., Butturini, A., Murphree, A. L.,Villablanca, J. G. Approaches to Treatment for Extraocular Retinoblastoma: Children's Hospital Los Angeles Experience. J. Pediatr.Hematol. Oncol. 26, 31-34 (2004).

[4]. Khelfaoui, F., Validire, P., Auperin, A., Quintana, E., Michon, J.,Pacquement, H., Desjardins, L., Asselain, B., Schlienger, P., Vielh, P.et al. Histopathologic Risk Factors in Retinoblastoma. A Retrospective Study of 172 Patients Treated in a Single Institution. Cancer 77,1206-1213 (1996).

[5]. Pratt, C. B., Kun, L. E. Response of Orbital and Central Nervous System Metastasis of Retinoblastoma Following Treatment with Cyclophosphamide/Doxorubicin. Pediatr. Hematol. Oncol. 4, 125-130 (1987).

[6]. Lee, C. T., Bilton, S. D., Famiglietti, R. M., Riley, B. A., Mahajan, A., Chang, E. L., Maor, M. H., Woo, S. Y., Cox, J. D., Smith, A. R. Treatment Planning with Protons for Pediatric Retinoblastoma, Medulloblastoma, and Pelvic Sarcoma: How Do Protons Compare With Other Conformal Techniques? Int. J. Radiat. Oncol. Biol. Phys. 63,362-372 (2005).

[7]. Stannard, C., Sealy, R., Hering, E., Hough, J., Knowles, R., Lecuona,K., Reddi, V. B. Post Enucleation Orbits in Retinoblastoma: Treatment with I125 Brachytherapy. Int. J. Radiat. Onclo. Biol. Phys. 54, 1446-1454 (2002).

[8]. Marks, L. B., Bentel, G., Sherouse, G. W., Spencer, D. P., Light, K.Craniospinal Irradiation for Trilateral Retinoblastoma Following Ocular Irradiation. Med. Dosim. 18, 125-128 (1993).

[9]. Nelson, S. C., Friedman, H. S., Oakes, W. J. Successful Therapy for Trilateral Retinoblastoma. Am. J. Ophthalmol. 114, 23-29 (1992).

[10]. Gimblett, M. L., Wellings, P. C., Lewis, M., Balakrishnan, V., Gupta, R. K. Retinoblastoma with Micrometastasis to CSF. Pathology 27, 27-29 (1995).

[11]. Chantada, G., Fandino, A., Davila, M. T., Manzitti, J., Raslawski, E.,Casak, S., Schvartzman, E. Results of a Prospective Study for theTreatment of Retinoblastoma. Cancer 100, 834-842(2004).

[12]. Tacyildiz, N., Yavuz, G., Unal, E., Gunduz, K., Gunalp, I., Ekinci, C.Encouraging Result of Tamoxifen in a Retinoblastoma Patient with Central Nervous System Metastasis. Pediatr. Hematol. Oncol. 20,473-476 (2003).
[13]. Antoneli, C. B., Steinhorst, F., de Cassia Braga Ribeiro, K., Novaes, P. E., Chojniak, M. M., Arias, V., de Camargo, B. Extraocular Retinoblastoma: A 13-year Experience. Cancer 98, 1292-1298 (2003).
[14]. Chantada, G., Fandino, A., Casak, S., Manzitti, J., Raslawski, E., Schvartzman, E. Treatment of Overt Extraocular Retinoblastoma. Med.Pediatr. Oncol. 40, 158-161 (2003).
[15]. Namouni, F., Doz, F., Tanguy, M. L., Quintana, E., Michon, J., Pacquement, H., Bouffet, E., Gentet, J. C., Plantaz, D., Lutz, P., Vannier,J. P., Validire, P., Neuenschwander, S., Desjardins, L., Zucker, J. M. High-dose Chemotherapy with Carboplatin, Etoposide and Cyclophosphamide Followed by Hematopoietic Stem Cell Rescue in Patients with High-risk Retinoblastoma: A SFOP and SFGM Study. Eur.J. Cancer 33, 2368-2375 (1997).
[16]. Schvartzman, E., Chantada, G., Fandino, A., de Davila, M. T., Raslawski, E., Manzitti, J. Results of a Stage-based Protocol for the Treatment of Retinoblastoma. J. Clin. Oncol. 14, 1532-1536 (1996).

XXXXXX, et. al. "XXXXXXXXXX." *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS),* 22(1), 2023, pp. 20-23.