# THE INDIAN JOURNAL OF CANCER

ISSN 0019-509X Volume 44 | Issue 3 | July-September 2007

### CONTENTS

#### **ORIGINAL ARTICLES**

Clinico-biologic profile of Langerhans cell histiocytosis: A single institutional study Narula G, Bhagwat R, Arora B, Banavali SD, Pai SK, Nair CN, Seth T, Laskar S, Muckaden MA, Kurkure PA, Parikh PM	93
Factors predicting seroma formation after mastectomy for Chinese breast cancer patients Wings TY Loo, Louis WC Chow	99
Orbital rhabdomyosarcoma: A case series Kaliaperumal S, Tiroumal S, Rao VA	104
Long term use of thalidomide: Safe and effective Sharma A, Raina V, Uppal G, Kumar R, Grover J	108
CASE REPORTS	
Cutaneous pancreatic metastasis: A case report and review of literature Hafez HZA	111
18F-FDG uptakes in leptomeningeal metastases from carcinoma of the breast on a positron emission tomography/computerized tomography study	1
Snan S, Rangarajan V, Purandare N, Luthra K, Medni S	
An atypical presentation of recurrent temporal lobe meningioma with external auditory canal Munshi A, Dutta D, Muzumdar D, Jalali R	mass 119
Neutropenic enterocolitis Singhal M, Lal A, Vyas S, Gulati A	122
Instructions for Contributors	124

The copies of the journal to members of the association are sent by ordinary post. The editorial board, association or publisher will not be responsible for non-receipt of copies. If any of the members wish to receive the copies by registered post or courier, kindly contact the journal's / publisher's office. If a copy returns due to incomplete, incorrect or changed address of a member on two consecutive occasions, the names of such members will be deleted from the mailing list of the journal. Providing complete, correct and up-to-date address is the responsibility of the members. Copies are sent to subscribers and members directly from the publisher's address; it is illegal to acquire copies from any other source. If a copy is received for personal use as a member of the association/society, one cannot resale or give-away the copy for commercial or library use.

Original Article

# **Orbital rhabdomyosarcoma: A case series**

#### Kaliaperumal S, Tiroumal S, Rao VA

Department of Ophthalmology, Jawaharlal Institute of Postgraduate Medical Education and Research, Pondicherry - 605 006, India

Correspondence to: Subashini Kaliaperumal, E-mail: subadoc@sify.com

## Abstract

Orbital rhabdomyosarcoma is the most common orbital malignancy of childhood with the common presentation of rapidly evolving unilateral proptosis. We studied six patients who were diagnosed and treated for rhabdomyosarcoma between January 1999 and June 2004. The age of the patients ranged from 4 to 29 years. Four patients presented with acute onset proptosis associated with signs of inflammation, mimicking orbital cellulitis. One patient presented with lid mass. Another patient presented with a soft, blind eye that was pushed superotemporally by a large inflammed, vascularised mass. Embryonal rhabdomyosarcoma was the commonest histopathological type in our series found in five patients. One patient was completely cured with chemotherapy alone whereas two patients were treated with a combination of chemotherapy and radiotherapy. Three patients in our series required exenteration.

Key words: Exenteration, proptosis, rhabdomyosarcoma orbital tumor

#### Introduction

Orbital rhabdomyosarcoma is the most common orbital malignancy of childhood and has been reported as accounting for 4% of all orbital masses in children.<sup>[1-4]</sup> The average age of presentation of this tumour is seven to eight years of age, though the tumor has also been reported in adults and infants.<sup>[4]</sup> Rhabdomyosarcoma is well known for its presentation of rapidly evolving unilateral proptosis.<sup>[1,2]</sup> An improvement in the mortality and morbidity of this condition has been associated with the use of recent therapeutic protocols including primary radiotherapy and chemotherapy.

#### **Case Series**

Our study comprised six patients who were diagnosed and treated for rhabdomyosarcoma between January 1999 and June 2004. The age of the patients ranged from 4 to 29 years. Four patients presented with rapid onset proptosis. Of these, one had upward and outward proptosis, two patients had downward and outward proptosis [Figure 1] and one more presented with axial proptosis. There was an unusual presentation of rapidly progressive upper lid swelling without proptosis in one patient. Another patient presented with atrophic eyeball



Figure 1: Downward and outward proptosis with chemosis caused by rhabdomyosarcoma

that was pushed superotemporally by a large inflammed, vascularized mass (4 cm x 3 cm) protruding between the lids.

X-ray findings showed increased bone density in two cases (Cases 3 and 4) and bony erosion in one case (Case 1). CT scan showed an inferomedial extraconal mass in one case [Figure 2], superonasal extraconal



Figure 2: Coronal CT scan picture showing inferomedial extraconal mass extending into apex causing an outward and upward proptosis

mass in two cases and an intraconal mass in one case. Histopathological examination of the biopsy tissue revealed embryonal rhabdomyosarcoma in five patients and alveolar rhabdomyosarcoma in one patient (Case 5) [Table 1].

All cases were treated with four to eight cycles of chemotherapy consisting of Vincristine, Cyclophosphamide and Actinomycin D. The cases apart from one (Case 4) received 4000 cGy of radiotherapy over four weeks. Two patients (Case 1 and 6) showed complete tumor regression with chemotherapy and radiotherapy, while another patient (Case 4) completely responded to chemotherapy alone. The remaining three patients (Case 2, 3 and 5) showed resistance to chemotherapy and radiotherapy. They required

exenteration as a life-saving measure. In one of these patients (Case 3), exenteration along with medial maxillectomy and ethmoidectomy was performed as the tumor extended into these sinuses [Table 1].

#### Discussion

Rhabdomyosarcoma is usually seen in the first decade of life. Though the presentation of rhabdomyosarcoma in adults is very rare, it has been reported.<sup>[5,6]</sup> In one study by Boparai and Dash, the oldest patient was 19 years whereas in the Chinese-American collaborative study, 4 out of 61 cases were above 20 years of age, the oldest being 56 years of age.<sup>[5]</sup> Pleomorphic rhabdomyosarcoma was suggested to occur more commonly in the older age groups.<sup>[6]</sup> The oldest in our series was of 29 years of age and had the embryonal type.

The finding of proptosis in children as the most common presenting sign in our patients underlines the importance of orbital rhabdomyosarcoma in the differential diagnosis of such a presentation. Jones *et al.*, have reported that 100% of the cases in their study had proptosis.<sup>[7]</sup> However, Schinter *et al.*, have documented 71% of cases with proptosis.<sup>[8]</sup> Boparai and Dash, in their case series had eleven out of 14 cases presenting with acute onset proptosis with inflammatory signs.<sup>[2]</sup> Four out of the six patients in our study presented with acute onset proptosis associated with signs of inflammation such as chemosis, congestion, tenderness and one patient was febrile. Hence rhabdomyosarcoma mimicking as orbital cellulitis is an important consideration to be kept in mind.

It was initially believed that the most common location of the tumor was the superonasal orbit, however, this

Table 1: Clinical profile of rhabdomyosarcoma								
S. no.	Age/sex	Clinical signs	CT scan	HPE	Treatment	Follow up		
1	10/F	Upward and outward proptosis	3.8 x 2 cm mass in inferomedial extraconal space	Embryonal	CH + RT	No recurrence after 3 years		
2	4/M	3 x 2 cm firm swelling in right upper lid causing mechanical ptosis.	Not done	Embryonal	CH + RT + EX	No recurrence for 2 years		
3	29/F	6 x 5 cm fleshy vascular growth pushing the atrophic eyeball superotemporally.	Diffuse orbital mass with maxillary and ethmoidal sinus extension	Embryonal	CH + RT + EX	Lost to follow-up		
4	10/F	Downward and outward proptosis	2.5 x 2 cm soft tissue mass in superonasal extraconal space	Embryonal	СН	No recurrence for 1 year		
5	9/F	Axial proptosis	Intraconal soft tissue mass	Alveolar	CH + RT + EX	No recurrence for 2 years		
6	7/M	Downward and outward proptosis	Superonasal extraconal mass	Embryonal	CH + RT	No recurrence for 2 years		

HPE- Histopathology, CH-Chemotherapy, RT-Radiotherapy, EX- Exenteration

has not been substantiated by others.<sup>[7]</sup> This has in fact been exemplified by the varying locations of the tumor seen in our series. Hence, in general, masses arising in other areas of the orbit in children must not be disregarded. There are also case reports on rhabdomyosarcoma in which the cases have presented as palpable lid nodules and on occasion felt to be a chalazion, cystic lesions or lid tumor of vascular origin.<sup>[8-11]</sup> Such an atypical presentation was also seen in our study (upper lid mass with mechanical ptosis). Awareness about these less common presentations of this fatal malignancy is essential to ensure early detection and initiation of treatment.

X-ray is not of much help in the diagnosis but CT scan gives an idea of the total extent of the lesion. CT scan is also of tremendous value in follow up to detect recurrence.

None were found to have metastatic disease at onset, but in the adult patient, the tumor spread to ethmoid and maxillary sinuses over time even after receiving chemotherapy and radiotherapy. This shows the aggressive nature of these tumors especially when it occurs in the older age group. Recurrence or metastatic spread following rhabdomyosarcoma usually occurs within the first three years after treatment. One of our patients developed recurrent disease at the ninth month. Sutow and co-workers found that six of the 14 cases in their study had recurrence or metastatic spread within the first year after diagnosis.<sup>[12]</sup> However, recurrence following treatment of rhabdomyosarcoma as late as six years has also been reported.<sup>[3]</sup> Hence the need for long term follow-up of these patients treated for orbital rhabdomyosarcoma.

Four histopathological subtypes of rhabdomyosarcoma have been described: embryonal, alveolar, botryoides and pleomorphic.<sup>[3]</sup> It is believed that the embryonal, alveolar and botryoides variants are of mesenchymal origin and that the pleomorphic variant is derived from mature skeletal muscle. The pleomorphic type is the most differentiated type and carries the best prognosis followed by the embryonal and botryoides types.<sup>[3,5]</sup> The alveolar type has been shown to carry the worst prognosis.<sup>[3,5]</sup> Of the three cases that needed exenteration in our study, one case was alveolar rhabdomyosarcoma and two were of embryonal type. Embryonal rhabdomyosarcoma occurs most frequently, accounting for about 71% and 67% cases of orbital rhabdomyosarcoma.<sup>[2,9]</sup> Our study also showed similar frequency with five (83%) cases proving to be embryonal rhabdomyosarcoma.

The practical difficulties need to be considered while

obtaining biopsy or doing fine needle aspiration cytology in these patients. The biopsy, in rhabdomyosarcoma is a difficult procedure because the vascularised tumor may result in severe bleeding, hindering the surgical procedure and this may be compounded by the severe chemosis or lid edema associated with this condition.

Earlier orbital rhabdomyosarcoma was treated by orbital exenteration. In 1979, Abraham et al. demonstrated irradiation alone or in combination with chemotherapy to be more effective than exenteration for both control and long-term survival.<sup>[11]</sup> Reports of the efficacy of combined radiotherapy and chemotherapy were confirmed by the Intergroup Rhabdomyosarcoma Study, which showed a three-year survival rate of 93% in a total of 127 patients with localized orbital rhabdomyosarcoma.<sup>[13]</sup> Radiotherapy and chemotherapy have also been enlisted in treatment of local recurrences and metastatic disease.<sup>[14]</sup> In our series of patients, we have noted complete regression of the tumor with chemotherapy and radiotherapy in two cases and with only chemotherapy in one case. However, in the remaining three patients, exenteration had to be performed despite prior treatment with chemotherapy and radiotherapy, as the regression was not complete. The exenteration procedure for such cases of refractory rhabdomyosarcoma was found to be of value in prolonging the survival rate.<sup>[15]</sup>

In conclusion, the primary modality of treatment of rhabdomyosarcoma is combined radiotherapy and chemotherapy, which appears to permit effective control and possible cure of this disease. At the time of biopsy, maximum debulking is essential. Exenteration is mutilating and induces the most unfortunate cosmetic appearance postoperatively. However, exenteration may be indicated in cases of incomplete tumor regression or in cases of recurrence after treatment with chemotherapy and radiotherapy. Judgment by the experienced therapist may be valuable in maximizing the gain and minimizing the risk of therapy in individual cases.

#### References

- Bajaj MS, Pushker N, Chaturvedi A, Betharia SM, Kashyap S, Balasubramanya R, et al. Orbital space occupying lesion in Indian children. J Pediatr Ophthalmol Strabismus 2007;44:106-11.
- Boparai MS, Dash RG. Clinical, ultrasonographic and CT evaluation of orbital rhabdomyosarcoma with management. Indian J Ophthal 1991;39:129-31.
- Volpe NJ, Jacobeic FA. Paediatric orbital tumours. Int Ophthalmol Clin 1992;32:201-21.
- McDonough RL, Leib ML. Atypical presentation of orbital rhabdomyosarcoma: A report of two cases. J Pediatr Ophthalmol Strabismus 1995;32:262-5.
- 5. Chess, Ni C, Yin RQ, Wang WJ, Cassady JR, Weichselbaum RR, *et al.* Tumours of the eyelid and orbit: A Chinese-American collaborative study. Int Ophthalmol Clin 1982;22:163-82.

- Kassel SH, Cophenhaver R, Arean VM. Orbital rhabdomyosarcoma. Am J Ophthalmol 1965;60:811-8.
- Jones IS, Reese AO, Kraut J. Orbital rhabdomyosarcoma: An analysis of 62 cases. Trans Am Ophthalmol Soc 1965;63:233-55.
- Schuster SA, Ferguson FC, Marshall RB. Alveolar rhabdomyosarcoma of the eyelid: Diagnosis by electron microscopy. Arch Ophthalmol 1972;87:646-51.
- 9. Ashton N, Morgan G. Embryonal sarcoma and embryonal rhabdomyosarcoma of the orbit. J Clin Pathol 1965; 18:699-714.
- Wolter JR, O'malley ER. Management of advanced rhabdomyosarcoma of the upper eyelid. J Pediatr Ophthalmol Strabismus 1978;15:303-5.
- 11. Abramson DH, Ellsworth RM, Toetter P, Wolff JA, Kitchint D. The treatment of orbital rhabdomyosarcoma with irradiation and chemotherapy. Ophthalmology 1979;86:1330-5.
- 12. Sutow WW, Sullivan MP, Ried HL, Taylor HG, Griffith KM. Prognosis

in childhood rhabdomyosarcoma. Cancer 1970;25:1384-90.

- Wharam M, Beltangady M, Hays D, Heyn R, Ragab A, Soule E, *et al*. Localised orbital rhabdomyosarcoma: An interim report of the Intergroup Rhabdomyosarcoma Study Committee. Ophthalmology 1987;94:251-4.
- Crist WM, Garmsey L, Beltangady MS, Gehan E, Ruymann F, Webber B, et al. Prognosis in children with rhabdomyosarcoma: A report of the Intergroup Rhabdomyosarcoma studies I and II. J Clin Oncol 1990;8:443-52.
- Mannor GF, Rose GE, Plowman PN, Kingston J, Wright JE, Vardy SJ. Multidisciplinary management of refractory orbital rhabdomyosarcoma. Ophthalmology 1997;104:1198-201.

Source of Support: Nil, Conflict of Interest: None declared.

#### Author Help: Sending a revised article

- 1) Include the referees' remarks and point to point clarification to those remarks at the beginning in the revised article file itself. In addition, mark the changes as underlined or coloured text in the article. Please include in a single file
  - a. referees' comments
  - b. point to point clarifications on the comments
  - c. revised article with text highlighting the changes done
- 2) Include the original comments of the reviewers/editor with point to point reply at the beginning of the article in the 'Article File'. To ensure that the reviewer can assess the revised paper in timely fashion, please reply to the comments of the referees/editors in the following manner.
  - There is no data on follow-up of these patients. Authors' Reply: The follow up of patients have been included in the results section [Page 3, para 2]
  - Authors should highlight the relation of complication to duration of diabetes. Authors' Reply: The complications as seen in our study group has been included in the results section [Page 4, Table]