REVISTA MÉDICA DA UFPR

ISSN 2358-193x
ISSN eletrônico 2447-3308
DOI 10.5380/rmu.v4i3

RELATO DE CASO/CASE REPORT

ESTHESIONEUROBLASTOMA: ENDOSCOPIC APPROACH IN A KADISH C PATIENT

ESTESIONEUROBLASTOMA: ABORDAGEM ENDOSCÓPICA EM UM PACIENTE KADISH C

Odery Ramos Junior[1],Gabriela Piovezani Ramos[2],Rayana Taques Posselt[2],Guilherme Piovezani Ramos[3],Thomas Marcolini[4], Joelma Pietrovicz[5]

ABSTRACT

Introduction: Esthesioneuroblastoma (EBN) is a rare and malignant tumor of olfactory epithelium. Due to its infrequency, there are several controversies regarding its treatment, being the endoscopic approach a new option. **Objective:** describe a young male case of EBN, its challenging diagnosis and options of treatment. **Case report:** 21 year old man who presented with a two month history of difficulty breathing and hyposmia after undergoing nasal vein cauterization for recurrent epistaxis. Physical examination confirmed a mucosal mass obstructing his left nostril. Magnetic Resonance Imaging of the face demonstrated a mass within the nasal septum infiltrating the oropharynx, hard palate, cribriform plaque and orbital lamina of the ethmoid bone. Endovascular embolization was performed followed by transsphenoidal endoscopic surgical excision. Anatomopathological and immunohistochemistry analysis confirmed the diagnosis of EBN. Repeat MRI-face showed a residual lesion requiring open craniotomy in addition to radio-chemotherapy. **Conclusion:** EBN is an uncommon malignant tumour arising in the superior aspect of nasal cavity. There is no consensus regarding optimal treatment strategies. Endoscopic transsphenoidal resection is reserved to early stages only and its use on advanced disease has been poorly explored.

Key Words: Nasal tumor. Esthesioneuroblastoma. Endoscopic resection

RESUMO

Introdução: Esthesioneuroblastoma (EBN) é uma neoplasia maligna rara do epitélio olfativo. Devido à sua raridade, há varias controvérsias quanto ao seu tratamento, sendo os avanços endoscópicos uma nova opção terapêutica. **Objetivo:** descrever o caso de um jovem masculino diagnosticado com EBN, a dificuldade diagnóstica e opções terapêuticas. **Relato de Caso:** masculino, 21 anos, apresentava há 2 meses dificuldade respiratória e hiposmia após ser submetido a cauterização de veia nasal devido a epistaxe recorrente. Ao exame foi confirmado massa nasal obstruindo narina esquerda. Ressonância magnética de face demostrou massa em septo nasal infiltrando orofaringe, palato, placa cribiforme e lâmina orbital do osso etmoide. Realizada embolização endovascular seguida de excisão cirúrgica endoscópica transesfenoidal. Anátomopatologia e imunohistoquímica confirmaram o diagnóstico de EBN. RNM pós-operatória demostrou lesão residual. Realizada craniotomia aberta em associação com radio e quimioterapia. **Conclusão:** EBN é um tumor maligno incomum da cavidade nasal superior. Por isso, não há consenso em relação à melhor abordagem cirúrgica de tratamento. Ressecção endoscópica transesfenoidal deve ser reservada apenas para estágios iniciais e seu uso em doença avançada ainda não foi profundamente estudado.

Descritores: Tumor nasal. Esthesioneuroblastoma. Ressecção endoscópica.

1 - Professor do Departamento de Clínica Médica da Universidade Federal do Paraná e Professor de Gastroenterologia da Faculdade Evangélica do Paraná

2 - Graduandas de Medicina da Faculdade Evangélica do Paraná

3 - Residente de Clínica Médica da Mayo Clinic – Rochester/EUA

4 - Residente de Neurocirurgia do Hospital Universitário Evangélico de Curitiba

5 - Médica do Departamento de Hematologia/Oncologia do Hospital Universitário Evangélico de Curitiba

Contato do Autor / Mail to:
Odery Ramos Junior - oderyramos@gmail.com
Rua General Carneiro, 181, 11º andar - Bairro Alto da Glória - Curitiba-PR - CEP 80060-900

INTRODUCTION

The differential diagnosis of nasal masses is broad, comprising a large variety of benign and malignant aetiologies. The masses may represent a primary pathology as well as a sign of systemic comorbidities[1]. Congenital midline nasal masses (CMNMs) are an important group of primary nasal masses that usually present on early stages of life, even though a small fraction can be recognized until adulthood. The most common CMNMs are dermoid tumours, haemangiomas, nasal gliomas and encephaloceles. Tumours originated from neuroendocrine and neuroectodermal epithelium may occasionally present as CMNMs. Among these, neuroblastomas are the most common, particularly in young males[2]. Esthesioneuroblastoma (EBN) is an uncommon malignant tumour arising in the superior wall of nasal cavity, representing 3-5% of all malignant nasal tumours. Since first described in 1924, around 1000 cases have been reported in the literature worldwide[2,3]. There is no consensus regarding optimal treatment strategies. Most reports in the literature describe single institution experience with limited number of cases. Advances in endoscopic therapies have opened a new option to manage patients with this rare condition.

CASE REPORT

A twenty one year old gentleman presented for evaluation due to a 2 month history of difficulty breathing and hyposmia. Past medical history was unremarkable without prior surgeries or hospitalizations. Family history was negative for cancer or coagulopathies. Non-smoker, he denied alcohol and illicit drug use.

Two months earlier, he presented to a local emergency department with a 4 month history of intermittent episodes of epistaxis and underwent electrical cauterization of the left nasal vein. Since then he had no new episodes of epistaxis. Nevertheless, he noticed progressive swelling of the left nostril associated with difficulty breathing and decrease in the capacity to detect different odors. Furthermore, he endorsed constant and progressively worsening frontal headache, minimally responsive to non-steroidal medications and acetaminophen. The headache would not be worsened by light or noise, and was not associated with nausea or vomiting. He denied fevers, chills, skin rashes, abdominal pain or changes in urine pattern.

On physical examination, patient was in no acute distress and no abnormalities on pulmonary auscultation. Neurologic examination showed no sensory or motor deficits, with normal evaluation of cranial nerves II-XII. Head, nose and ears examination was remarkable for a mucosal mass obstructing his left nostril. There was also tenderness to palpation of left frontal bone surrounding his left orbit. There was no conjunctival drainage or erythema. Right nostril was patent without signs of local infiltration. Fundoscopic examination was normal.

Initial laboratory evaluation including complete blood count, electrolyte panel and liver enzymes was within normal limits. Antinuclear (ANA) and antineutrophil cytoplasmic antibodies (ANCA) were negative. Magnetic resonance imaging (MRI) of the face demonstrated a contrast enhanced 8 x 6 x 2.4 cm solid lesion on the left nasal cavity with close contact with the nasal septum (Figure 1A and 1B). The mass extended posteriorly to the oropharynx, inferiorly to the hard palate, infiltrating the cribriform plaque superiorly and laterally penetrating the orbital lamina of the ethmoid bone. The lesion was surgically excised, as described on the treatment section below, and sent for anatomopathological analysis. Final biopsy results showed poorly differentiated neoplasia with features suggestive of esthesioneuroblastoma (Figure 2A). Immunohistochemistry analysis demonstrated CD56, vimentin and synaptophysin positive tissue, confirming the diagnosis of olfactory neuroblastoma (Figure 2B). After the diagnosis of esthesioneuroblastoma was confirmed, patient underwent endovascular embolization of invasive intracranial lesion followed by transsphenoidal endoscopic surgical excision of the nasopharyngeal mass.

A repeat MRI of the face showed a residual 1 x 0.7 cm contrast enhancing lesion on the lateral nasal fossa (Figure 1C). In order to reassess and widen the surgical margins the patient was submitted to an open craniotomy. The second procedure was complicated with face cellulitis on postoperative day 20 with purulent drainage on the surgical incision. In addition to intravenous antibiotic therapy, a third surgical procedure was performed to optimize control of the infection site.

External radiotherapy directed to the nasal fossa, maxillary and sphenoid sinuses was initiated four months following the initial surgical interventions. This was followed by five cycles of chemotherapy with ifosfamide and etoposide. One month following the initiation of radio-chemotherapy, the patient presented complaining of nasal xantochromic drainage. A CT-head demonstrated a laminar collection underneath the frontal bone plaque. Patient was diagnosed with osteomyelitis requiring bifrontal craniotomy and antibiotic therapy.

Patient completed all additional cycles of radio-chemotherapy without further complications. Computed tomography (CT) of the head after completion of therapy was normal, without any remnant of the lesion. He is scheduled to return for reconstructive prosthesis of the

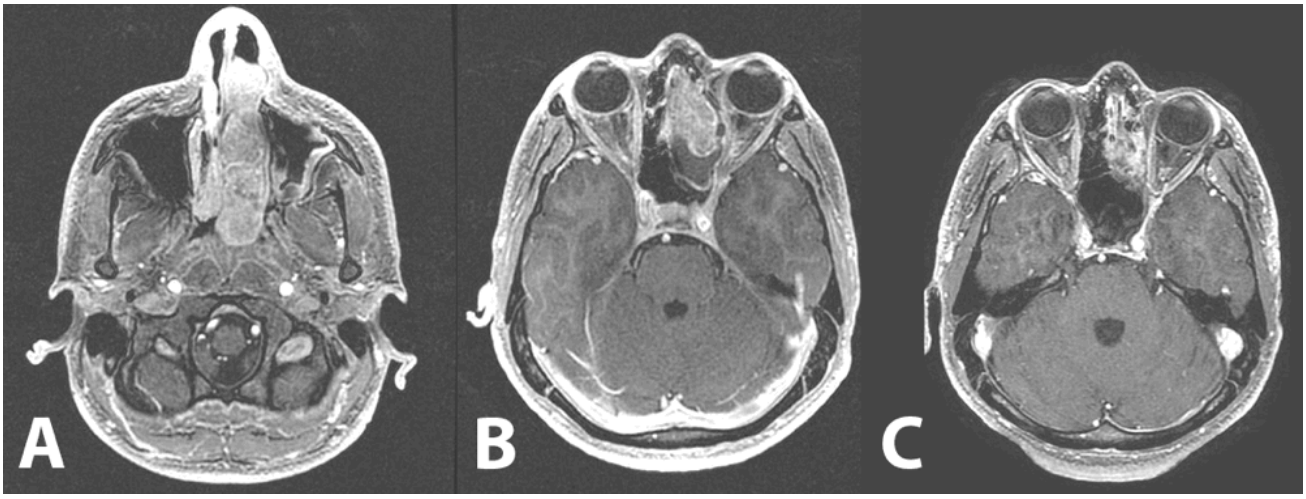

Figure 1: MRI Brain pre and post transsphenoidal resection - Images A and B demonstrate an 8x6x2.4 cm solid mass occupying the left nasal cavity. Image C demonstrates postoperative changes with a residual 1x 0.7 cm contrast-enhancing lesion on the lateral nasal fossa.

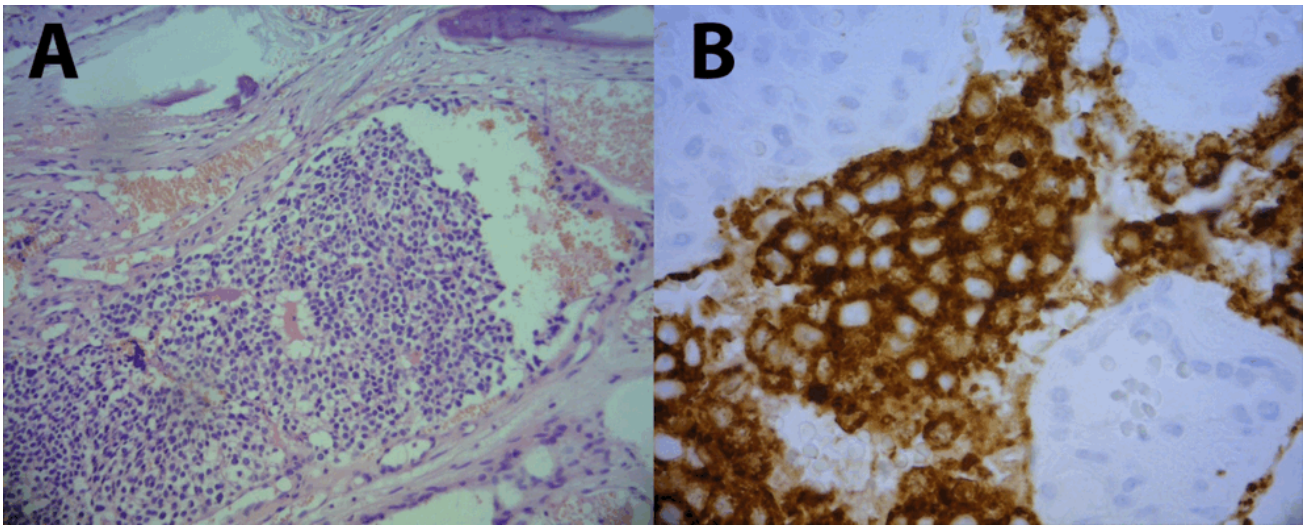

Figure 2: Anatomopathological and immunohistochemistry analysis - Image A shows small atypical neoplastic cells invading the surrounding connective tissue (Magnification 100x). Image B is part of immunohistochemistry analysis demonstrating strong positivity for synaptophysin (magnification 400x).

frontal skull and continues follow-up with oncology every 3 months without signs of recurrence.

DISCUSSION

EBN is an uncommon malignant tumour arising in the superior aspect of nasal cavity that frequently invade orbit, skull base and even intracranial structures[4,5]. Initial symptoms are mostly nonspecific and can include nasal obstruction, epistaxis and hyposmia. Symptoms can mimic other benign inflammatory or infectious diseases. Thus, diagnosis delay is not uncommon[6]. Additional symptoms can be present depending on the site and stage of invasion of the tumour, evidenced in our case by severe frontal headache due to intracranial invasion through the left orbit[7].

Incidence peaks bimodally in 11-20 and 50-60 years; however, age may range from 3 to 88 years with no sex predilection, or a slight female predominance[7,8]. Even though it is usually unilateral, there are reports of bilateral cases[8]. Local recurrence occurs in up to 57% of cases and metastasis has been reported to happen between 20-60% of affected individuals, most commonly to cervical lymph nodes, parotid glands, skin, lungs,

bone, liver, orbit and spinal cord[8]. The present patient presented on an uncommon age group with already signs of locally invasive disease, which made the initial diagnosis challenging.

The diagnosis is usually established through anatomopathological evaluation, which reveals homogenous small cells with uniform round to oval nuclei demonstrating rossete or pseudorossete formation in addition to eosinophilic fibrillary intercelular background material. Tumours may also be S100 positive. Following confirmation by biopsy, assessment of local extension with CT and/or MRI is necessary[6,9]. CT images are essential for correct staging. MRI enables a better estimate of tumor spread surrounding soft tissue areas[9]. Based on imaging findings, tumors are staged using the Kadish grading criteria in one of four categories: Group A, which comprises tumors limited to the nasal fossa; Group B, in which tumors extend to the paranasal sinuses; Group C, with tumor extension beyond the paranasal sinuses, such as in the present case; and Group D, with evidence of distant metastasis[3,10].

Several benign and malignant conditions can present as intranasal masses. Among malignant causes, alongside with EBN, other neuroendocrine and neuroectodermal neoplasms of the sino-nasal tracts should be considered in light of their similar embryonic origin to EBN. Table 1 summarizes some of the diagnosis considered in the present case prior to final pathological analysis[1].

Table 1: *Differencial diagnosis for intranasal masses*

BENIGN	MALIGNANT
Nasal Polyps	Pituirary Adenoma
Nasal Cysts	ParaganglIoma
Asthma	Malignant Melanoma
Cystic Fibrosis	Ewing family of tumours
Wegener's Granulomatosis	Neuroendocrine Carcinoma

Standard therapy for EBN consists in surgical resection followed by chemo and radiotherapy. Long term effective control can be achieved when neoadjuvant therapy is combined with aggressive surgical resection[2,3]. A new endoscopic modality with a purely transsphenoidal approach has been recently introduced among the surgical resection options for this patient population[11]. In addition to being minimally invasive, the technique also improves exposure to the sphenoid sinus, orbital apex and nasopharynx when compared to craniofacial resection. Nevertheless, not all patients are candidates to this new approach. Restrictions include involvement of facial soft tissues, high vascularization, lateral extension over the orbital or for extensive intracranial invasion[11,12]. Therefore, most centers reserve endoscopic resection for patients with lower Kadish grades. The endoscopic approach in the present case was unique in light of his initial high grade staging (Kadish C). Even though a second MRI had shown signs of residual disease that lead to a second resection, patient remains without further signs of recurrence.

In accordance to the literature, small cohorts studies have shown that the use of an endoscopic approach to patients with Kadish stage C or D disease can be effective in small cohorts[13]. One of the reasons of utilizing this technique on the present case was that it would allow reasonable exposure of the cavity minimizing complications, such as osteomyelitis, which did end up occurring following the second resection which used the traditional open approach.

Studies shows that monitoring beyond the standard 5 year period is necessary[10]. Survival rates for combined therapy, traditional surgery and radiotherapy are 72.5%, 62.5% and 53.8%, respectively[10,12,14]. Survival following endoscopic resection, especially in the setting of higher Kadish grades, remains undetermined. Further studies with larger numbers of patients are necessary to assess the real role of this technique in patients with advanced disease. For that purpose, multicentre studies may be necessary in light of the low EBN incidence rates. Therefore, decision of the optimal surgical resection should be made in a case by case setting based on the extension of the disease, provider experience and patient preference in order to prevent recurrence and complications.

REFERENCES

1. Montone K. The differential diagnosis of sinonasal/nasopharyngeal neuroendocrine/neuroectodermally derived tumors. Arch Pathol Lab Med. 2015 Dec; 139(12): 1498-1507.

2. Dulguerov P, Allal AS, Calcaterra TC. Esthesioneuroblastoma: a meta-analysis and review. Lancet Oncol. 2001 Nov;2(11):683-90. Review.

3. Kumar, R. Esthesioneuroblastoma: Multimodal management and review of literature. World J Clin Cases. 2015 Sep 16;3(9):774-8.

4. Gallia GL, Reh DD, Lane AP, Higgins TS, Koch W, Ishii M. Endoscopic resection of esthesioneuroblastoma. J Clin Neurosci. 2012 Nov; 19(11):1478-82.

5. Yin ZZ, Gao L, Luo JW, Yi JL, Huang XD, Qu Y et al. Long-term outcomes of patients with esthesioneuroblastomas: A cohort from a single institution. Oral Oncol. 2016 Feb; 53:48-53.

6. Saade RE, Hanna EY, Bell D. Prognosis and biology in esthesioneuroblastoma: the emerging role of Hyams grading system. Curr Oncol Rep. 2015 Jan; 17(1):423.

7. El Kababri M, Habrand JL, Valteau-Couanet D, Gaspar N, Dufour C, Oberlin O. Esthesioneuroblastoma in Children and Adolescents: Experience on 11 Cases. J Pediatr Hematol Oncol. 2014 Mar;36(2):91-5.

8. Kumar A, Sethi B, Kumar Y, Mishra JP. Esthesioneuroblastoma arising from the middle meatus. J Cancer Res Ther. 2013 Jan-Mar;9(1): 99-101.

9. Tajudeen BA, Arshi A, Suh JD, Palma-Diaz MF, Bergsneider M, Abemayor E, et al. Esthesioneuroblastoma: an update on the UCLA experience, 2002-2013. J Neurol Surg B Skull Base. 2015 Feb;76(1):43-9.

10. Loy AH, Reibel JF, Read PW, Thomas CY, Newman SA, Jane JA, et al. Esthesioneuroblastoma: continued follow-up of a single institution's experience. Arch Otolaryngol Head Neck Surg. 2006 Feb;132(2):134-8.

11. Manthuruthil C, Lewis J, McLean C, Batra PS, Barnett SL. Endoscopic Endonasal Management of Olfactory Neuroblastoma: A Retrospective Analysis of 10 Patients with Quality-of-Life Measures. World Neurosurg. 2016 Jun; 90:1-5.

12. Uslu GH, Canyilmaz E, Zengin AY, Mungan S, Yoney A, Bahadir O, et al. Olfactory neuroblastoma: A case report. Oncol Lett. 2015 Dec;10(6):3651-3654.

13. Fu TS, Monteiro E, Muhanna N, Goldstein DP, de Almeida JR. Comparison of outcomes for open versus endoscopic approaches for olfactory neuroblastoma: A systematic review and individual participant data meta-analysis. Head Neck. 2016 Apr;38 Suppl 1:E2306-16.

14. Benfari G, Fusconi M, Ciofalo A, Gallo A, Altissimi G, Celani T, et al. Radiotherapy alone for local tumour control in esthesioneuroblastoma. Acta Otorhinolaryngol Ital. 2008 Dec;28(6):292-7.