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ADENOID CYSTIC CARCINOMA OF THE LACRIMAL GLAND METASTASIZING AFTER LONG FOLLOW-UP TO SINGLE DORSAL VERTEBRAE: A CASE REPORT AND REVIEW OF THE LITERATURE

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Abstract: *Adenoid cystic carcinoma (ACC) of the lacrimal gland is a rare disease, but it is the most common malignant epithelial tumor of the lacrimal gland, with poor prognosis. ACC of the lacrimal gland is notorious for its slow growth and tendency to recur despite surgical therapy and following radiotherapy and/or chemotherapy. Perineural invasion is considered an indicator of poor prognosis and data showed an inherent risk of spread to local invasion and recurrence, especially to skull base. This tumor type occasionally metastasize via haematogenous spread to lungs, brain and bone in decreasing order of frequency. When it happen, metastases are always multiple and wide. We report a case of a 29-year-old woman followed in our centre with right eye ACC of lacrimal gland resected on January 2009 and treated with intraoperatory cyber knife radiotherapy (16 Gy total dose). Histologic report evidenced no signs of perineural invasion and low risk local and distant recurrence. After five years of follow-up spine MRI reported a single lesion in first dorsal vertebrae with neurologic compressive sympthoms, subjected to D1 laminectomy and subsequent radiotherapy. Histology confirmed metastasis of ACC. No radiologic evidence of other locoregional, synchronous or metachronous distant metastasis were described. After treatment, patient is actually in close follow up. In literature case with distal recurrence after many years are described, but always with many metastases in bone, lung and node. At our knowledge, this case report for first time a single metastatic bone site treated with surgery and radiotherapy.*

KEY WORDS: *Adenoid cystic carcinoma, Lacrimal gland, Metastases, Perineural invasion, Radiotherapy.*

INTRODUCTION

Adenoid cystic carcinoma (ACC) is an uncommon malignancy that arises in secretory glands and accounts for about 1% of all head and neck malignancies[1-3]. ACC of the lacrimal gland is also a rare disease, but it is the most common malignant epithelial tumor of the lacrimal gland, and represents 11% of epithelial neoplasms of the lacrimal gland[4] and 1.6% of all orbital tumors[5]. ACC was first described in literature by Theodore Billroth, and was initially named *cylindroma* because of its specific histopathologic characteristics[6,7].

The poor prognosis for patients with ACC of the lacrimal gland is well recognized[8-10] and historical data[11] reported a survival rate of less than 50% at 5 years and 20% at 10 years regardless of the local treatment regimens. The difficulty in achieving a long-term disease-free survival in this disease is attributed to the complex regional orbital anatomy and the aggressive biological behavior of the tumor. In addition, ACC of the lacrimal gland

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is notorious for its slow growth and tendency to recur despite surgical therapy and following radiotherapy and/or chemotherapy[12]. The high recurrence rate is also increased due to assumption that appropriate local therapy for ACC of the lacrimal gland remains controversial. In fact, some authors advocate conservative surgical therapy followed by external-beam radiation therapy or proton-beam therapy, whereas others believe that radical surgery probably results in better local control and possibly better long-term survival[2,13,14]. Perineural invasion is considered an indicator of poor prognosis and data showed an inherent risk of spread to local invasion and recurrence, especially to skull base[11]. This tumor type occasionally metastasize via haematogenous spread to lungs, brain and bone in decreasing order of frequency. When it happen, metastases are always multiple and wide[11,14].

There are few studies and reports on lacrimal gland ACC describing time interval to presentation of metastases and length of follow-up required[15-17].

We reported a case of ACC of lacrimal gland with isolated metastasis after five years from initial tumor in first dorsal vertebrae and neurologic compressive sympthoms. No evidence of other locoregional, synchronous or metachronous distant metastasis were described.

CASE REPORT

A 29-year-old woman with no relevant prior history presented at January 2009 to the ophthalmologist complaining of initial proptosis and swelling of the right eye, a medially displaced right globe and increased periorbital pressure. Ophthalmologic examination revealed a 2 mm proptosis, visual acuity of 16/20 in right eye (normal in contralateral one), along with normal pupils and color vision, minimal reduction of extraocular motility. After initial not responsive steroid therapy, orbital and cranial MRI was performed. The exam showed a 34 x 18 x 22 mm extraconal mass effacing the lacrimal grand and displacing the right lateral rectus, optic nerve and globe, with infiltration of zeugmatic and sphenoidal bones, initial compression of suprasellar cistern, hypofisis and optic chiasm (Figure 1 A-D). The tumor was resected on March 2009 under the presumption that it represented a pleomorphic adenoma or an adenoid cystic carcinoma.

On macroscopic examination, the specimen consisted of pink, rubbery 36 x 20x 22 mm nodular mass with a small amount of attached adipose tissue. On section, it revealed a tan center exhibiting small necrotic foci. Intraoperatory histologic report was adenoid cystic carcinoma. On these bases, a RT treatment with intraoperatory cyber knife radiotherapy was proposed (16 Gy total dose).

Definitive histologic report was adenoid cystic carcinoma with solid component about 20%, no signs of perineural invasion. The tumor infiltrated the remaining adjacent benign lacrimal gland tissue and extended to the margins. For this reason, on September 2009 a sovradosage Synenergy RT was performed.

Subsequent semestral instrumental and clinic follow up was performed, without evidence of disease recurrence. On June 2013 evidence of corneal ulcer, treated with oftalmic drugs and resolved.

From July 2013 patient refers intermittent cervical and back pain, partially responsive to non steroidal anti-inflammatory drugs. Spine MRI on August 2013 evidenced only a disc protrusion in C5-C6 vertebrae, an hemangioma bone of D8 one, S1 isthmic aspecific lysis. At the level of the L4-L5 disc protrusion with posterior median hernia. The Spinal canal amplitude was preserved and no signal of pathologic alterations were described. A consequential cranial MRI evidenced only results of previous surgery, showing in correspondence of the lateral wall of the right orbit the presence of a hypodense fibrotic residual tissue. Patient performed ultrasound physical therapy and postural TENS, without pain resolution.

On February 2014 patient presented also upper extremity weakness and paresthesias. On March 2014 a PET CT whole body was performed, with evidence of hypermetabolism area (SUV maximus 4.5) extended to spinous and transverse processes of D1 soma, with substantial structural alterations and lytic character. This finding appear rather suggestive for the presence of bone colonization of pathologic disease. No other pathologic sites are described in the instrumental exam.

A confirmation brain plus facial MRI was requested, explained on April 2014. At scull and facial scans no evidence of recurrence was noted. In spine scan MRI evidenced a large area of altered signal, which involves soma, transverse processes and thorny of D1, presenting extra-compartmentalization with invasion of root canal and paraspinal tissues, extending up to C7 vertebrae and low to D2 one. There was also evidence of initial spinal cord stenosis, with intense contrast enhancement (Figure 2 A-D).

The patient on May 2014 has been subjected initially to D1 laminectomy c/o Neurosurgery Clinic and after to stereotaxic radiation therapy from C7 to D2, with rapid regression of neurologic symptoms and progressive pain reduction. Histology confirmed metastasis compatible with a single location

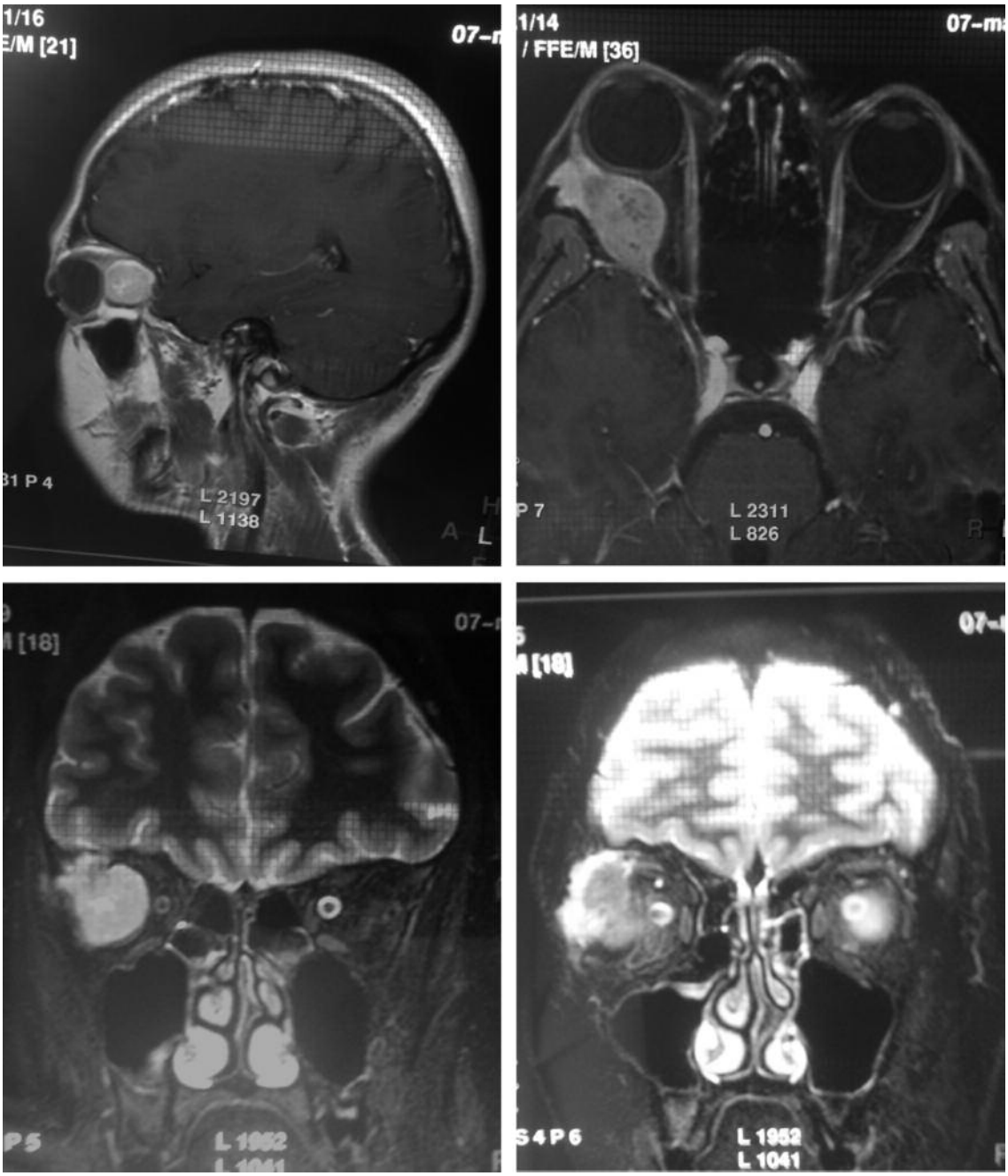

Figure 1. MRI (**A-D**) showed a 34 x 18 x 22 mm extraconal mass effacing the lacrimal grand and displacing the right lateral rectus, optic nerve and globe, with infiltration of zeugmatic and sphenoidal bones

of ACC. PET/TC explained on June 2014 showed no evidence of pathologic hypermetabolism areas in the body, a hypodense fibrotic residual tissue in D1 without contrast enhancement.

After treatment, patient is actually in close follow up and no chemotherapy was proposed. The collegial decision is based on several factors: the presence of single recurrence lesion, treated and not active in enhancement at post-radioterapy control; the absence of other active lesions; the lack of an effective first-line chemotherapy treatment in this disease.

DISCUSSION AND REVIEW OF LITERATURE

The case report shows a lacrimal gland ACC in young woman that recurred after five years follow up in single and distant bone localization. In literature, as previously explained, ACC often recurred locally and distant metastases, when present, are multiple and spread. Late presentation of distant metastases is a recognised feature of ACC with reported distant metastasis rates of 19-24%, and a mean time to presentation of 7.6 years. Distant re-

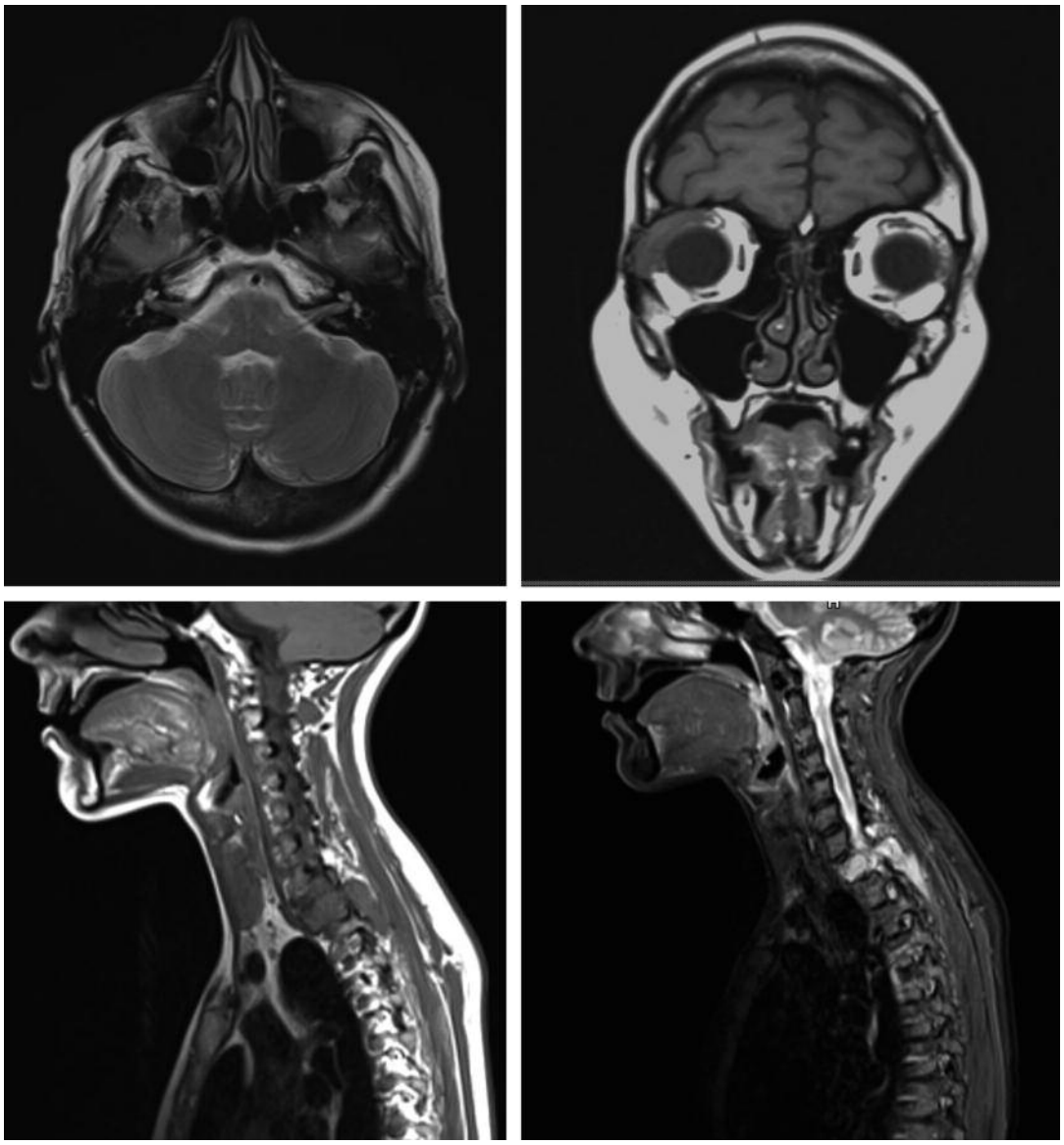

Figure 2. Scull and facial MRI (**A-B**) showed no evidence of recurrence. Spine MRI (**C-D**) evidenced an area of altered signal in D1, with extra-compartmentalization and invasion of root canal and paraspinal tissues, extending up to C7 vertebrae and low to D2 one.

currence after 16 years has been reported, with bone and lungs as the commonest sites.

Patients with lacrimal gland ACC usually at diagnosis present with a relatively short symptom duration (less than a year), and follow a painful, rapidly worsening clinical course. With regard to symptoms, Wright et al[14] initially in their pilot and historical study emphasized that pain is an important symptom of lacrimal gland and often implies perineural infiltration. However, in subsequently series with a lacrimal gland ACC, authors found that pain was not necessarily related to perineural infiltration, symptom duration, the presence of bone invasion, loss of trigeminal nerve function, or frequency and time of recurrence. Perineural invasion is also considered an indicator of poor prognosis, because of the inherent risks of spread to the skull base and local recurrence[15,16]. ACC of the lacrimal gland has a greater likelihood of invading intracranially for the following reasons: more neural and vascular structures exist in the orbit; the bones of the orbit are connected directly to the intracranial cavity; and the peri-orbit and nerve sheath are closely connected. These factors increase the risk that an ACC of the lacrimal gland will invade intracranially via perineural, vascular, intraosseous, and leptomeningeal routes and via a nerve sheath[17].

In our case patient despite initial symptoms at histologic evaluation presented no perineural in-

vasion. Indeed patient presented no local or skull base involvement. The low risk class of the disease has not led to the need to perform adjuvant treatments[18]. The collegial decision is based on several factors: the presence of single recurrence lesion, treated and not active in enhancement at post-radiotherapy control; the absence of other active lesions; the lack of an effective first line chemotherapy treatment in this disease.

The peculiarity of the case is related to single distant bone lesion after five years, different from normal widespread behavior of the disease. In literature case with distal recurrence after many years are described, but always with many metastases in bone, lung and node. At our knowledge, this case report for first time a single metastatic bone site treated with surgery and radiotherapy. Further data are mandatory for best correct strategy treatment.

Conflict of Interests:
The Authors declare that they have no conflict of interests.

REFERENCES

1. Diaz EM Jr, Kies MS. Chemotherapy for skull base cancers. Otolaryngol Clin North Am 2001; 34: 1079-1085.
2. Wiseman SM, Popat SR, Rigual NR, Hicks WL, Orner JB, Wein RO, McGary CT, Loree TR. Adenoid cystic carcinoma of the paranasal sinuses or nasal cavity: a 40-year review of 35 cases. Ear Nose Throat J 2002; 81: 510-514, 516-517.
3. Witt RL. Adenoid cystic carcinoma of the minor salivary glands. Ear Nose Throat J 1991; 70: 218-222.
4. Rapidis AD, Givalos N, Gakiopoulou H, Faratzis G, Stavrianos SD, Vilos GA, Douzinas EE, Patsouris E. Adenoid cystic carcinoma of the head and neck. Clinicopathological analysis of 23 patients and review of the literature. Oral Oncol 2005; 41: 328-335.
5. Gormley WB, Sekhar LN, Wright DC, Olding M, Janecka IP, Snyderman CH, Richardson R. Management and long-term outcome of adenoid cystic carcinoma with intracranial extension: A neurosurgical perspective. Neurosurgery 1996; 38: 1105-1113.
6. Billroth T. Untersuchungen uber die Entwicklung der Bluttgefasse. Berlin: Reimer, 1856, pp. 5-69.
7. Conley J, Dingman DL. Adenoid cystic carcinoma in the head and neck (cylindroma). Arch Otolaryngol 1974; 100: 81-90.
8. Lee DA, Campbell RJ, Waller RR, Ilstrup DM. A clinicopathologic study of primary adenoid cystic carcinoma of the lacrimal gland. Ophthalmology 1985; 92: 128-134.
9. Wright JE, Stewart WB, Krohel GB. Clinical presentation and management of lacrimal gland tumours. Br J Ophthalmol 1979; 63: 600-606.
10. Gamel JW, Font RL. Adenoid cystic carcinoma of the lacrimal gland: the clinical significance of a basaloid histologic pattern. Hum Pathol 1982; 13: 219-225.
11. Font RL, Gamel JW. Adenoid cystic carcinoma of the lacrimal gland: a clinicopathologic study of 79 cases. In: Nicholson, DH, editor. Ocular Pathology Update. New York: Masson, 1980; pp. 277-283.
12. Front RL, Smith SL, Bryan RG. Malignant epithelial tumors of the lacrimal gland: a clinicopathologic study of 21 cases. Arch Ophthalmol 1998; 116: 613-616.
13. Witt RL. Adenoid cystic carcinoma of the minor salivary glands. Ear Nose Throat J 1991; 70: 218-222.
14. Wright JE. Factors affecting the survival of patients with lacrimal gland tumors. Can J Ophthalmol 1982; 17: 3-9.
15. Khan AJ, DiGiovanna MP, Ross DA, Sasaki CT, Carter D, Son YH, Haffty BG. Adenoid cystic carcinoma: A retrospective clinical review. Int J Cancer 2001; 96: 149-158.
16. Bartley GB, Harris GJ. Adenoid cystic carcinoma of the lacrimal gland: Is there a cure... yet? Ophthal Plast Reconstruct Surg 2002; 18: 315-318.
17. Esmaeli B, Ahmadi MA, Youssef A, Diba R, Amato M, Myers JN, Kies M, El-Naggar A. Outcomes in patients with adenoid cystic carcinoma of the lacrimal gland. Ophthal Plast Reconstruct Surg 2004; 20: 22-26.
18. Friedrich RE, Bleckmann V. Adenoid cystic carcinoma of salivary gland origin: localization, classification, clinical pathological correlation. Treatment results and long-term follow-up control in 84 patients. Anticancer Res 2003; 23: 931-940.