

CASE REPORT

Malignant fibrous histiocytoma of larynx with giant cell: case report and histological-clinical considerations

FL. ANGHELINA¹⁾, ELENA IONIȚĂ¹⁾, LUMINIȚA CHIUȚU²⁾,
CARMEN AURELIA MOGOANTĂ¹⁾, S. CIOLOFAN¹⁾,
CRISTINA IOSIF³⁾, M. CEAUȘU³⁾

¹⁾ENT Department

²⁾Department of Anesthesiology

University of Medicine and Pharmacy of Craiova

³⁾Department of Pathology, "Victor Babeș" National Institute
for Research and Development in Pathology and
Biomedical Sciences, Bucharest

Abstract

Introduction: Malignant fibrous histiocytoma (MFH) is a tumor which has a mesenchymal origin, and an uncertain histogenesis. MFH with giant cell accounts for 3–15% of all malignant fibrous histiocytomas. **Objective:** To explore the histopathology, the diagnosis and the treatment of MFH with giant cell of larynx. **Patient and Methods:** We report a case of a glottic MFH at a 59-year-old male, who has been smoking for 30 years, and was hospitalized in June 2008 at Emergency County Hospital of Craiova. **Results:** The largely-sized tumor was originated in glottic area, upper a left vocal cord, with no paresis. The tumor determined respiratory failure and dysphonia. Patient underwent surgical excision of the tumor after an emergency tracheotomy. The immunohistochemical techniques proved positive for vimentin, smooth muscle actin, CD68, CD34, bcl2, EGFR, S100, Ki67, and negative for CD117, NFT, chromogranin, c-erbB2, CK34betaE12, MNF116, and p53. **Conclusions:** Malignant fibrous histiocytomas (MFH) with giant cell of larynx are very rare mesenchymal neoplasm (this case seems the first reported). The diagnosis of MFH of larynx was difficult and the immunohistochemistry could have been helpful.

Keywords: malignant fibrous histiocytoma, larynx, giant cell, CD68, vimentin, smooth muscle actin (SMA).

□ Introduction

Malignant fibrous histiocytoma (MFH) is a tumor which has a mesenchymal origin and an uncertain histogenesis and it is mainly found in the limbs, the abdomen and the retroperitoneum [1, 2].

The term MFH is used to describe a histiocytic-like tumor with fibrous tissue [3].

Histologically, there are five subtypes of MFH [4].

The histological diagnosis is based on the proliferation of neoplastic cells (fusiform and polypoid) that look like fibroblasts and histiocytes, with aberrant atypias and mitosis. They are organized in bundles with a variable pattern. It is difficult to establish a correct differential diagnosis with conventional histological techniques and, in order to be sure we need confirmation from immunohistochemistry to distinguish it from other tumors with mesenchymal differentiation [5, 6].

We have studied a very rare case of malignant fibrous histiocytoma of larynx, with giant cell variety.

□ Patient, Methods and Results

We report a case of a glottic MFH with giant cell. 59-year-old male patient, who has been smoking for

30 years, was hospitalized in June 2008 at Emergency County Hospital of Craiova. He had hoarseness for six months and progressive dyspnea for a month. While undergoing indirect laryngoscopy we discovered a globular, red-violaceous, pseudopolypoid lesion on medium third of vocal cord on the left side, with ulcerated epithelial cover, with no vocal cord paresis, having a diameter of approximately 15 mm. There was no palpable cervical lymphadenopathy. Biological tests, neck echography and pulmonary radiography were normally.

Initially, we had performed an emergency tracheotomy due to severe respiratory failure. After the tracheotomy, we performed a direct microlaryngoscopy with excision of the tumor (Figure 1), and with closure of tracheotomy in next step.

The tumor was fixed in 10% formalin solution and wax embedded. The lesion was morphologically studied with Hematoxylin–Eosin stain. The histopatho-logical study showed a malign proliferation with spindle cell proliferation with whorl pattern beneath the epithelium (Figure 2) and many multinucleated giant cells placed among fusiform cell fascicles (Figures 3–5). We noticed the appearance of frequent atypical and typical mitoses (Figure 6) and of small necrosis zones.

The immunocytochemical investigation was performed using vimentin, smooth muscle actin, CD68, CD34, bcl2, EGFR, S100, Ki67, CD117, NFT, chromogranin, c-erbB2, CK34betaE12, MNF116, p53 antibodies (DAKO) and Streptavidin–Biotin method (LSAB Kit, DAKO).

Vimentin (VIM) was positive diffused immunohistochemical stain in spindle tumoral cells (Figure 7). The histiocytic marker CD68 was positive in large and giant tumoral cells (Figure 8). S100 was variable positive in spindle-shaped cells (Figure 9). Smooth muscle actin (SMA) was positive in medium-sized

vessels within the tumor mass (Figure 10), and focally positive in spindle cells (Figure 11). CD34 was positive in numerous vessels and negative in tumor (Figure 12). Bcl2 was rare positive in tumoral cells. EGFR was positive in blood vessels and negative in tumor cells (Figure 13). Ki67 was positive in about 30–40% of tumor cells nuclei (Figure 14). The immunohistochemical techniques proved negative for CD117, NFT, chromogranin, c-erbB2, CK34betaE12, MNF116, and p53. The patient refused our proposal to undergo a partial laryngectomy. The evolution in the following two months did not show any recurrences.

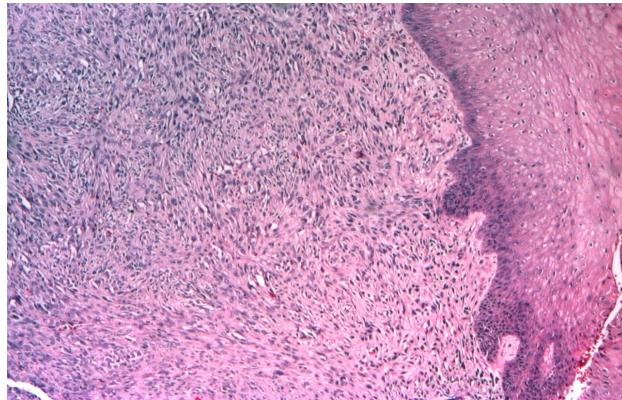


Figure 1 – Spindle cell proliferation with whorl pattern beneath the epithelium (HE stain, ob. 4×).

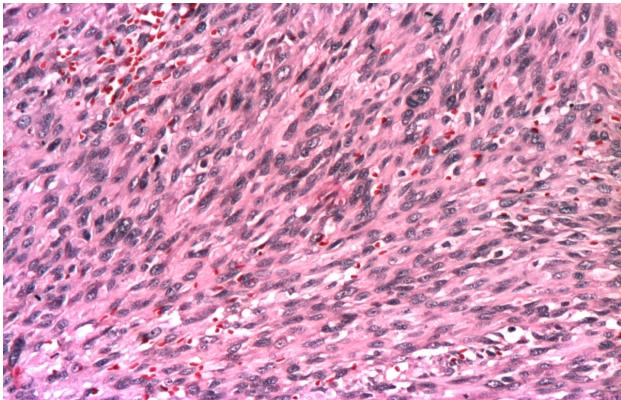


Figure 2 – Dense cellular area with plump ovoid to spindle shape cells with prominent nucleoli (HE stain, ob. 10×).

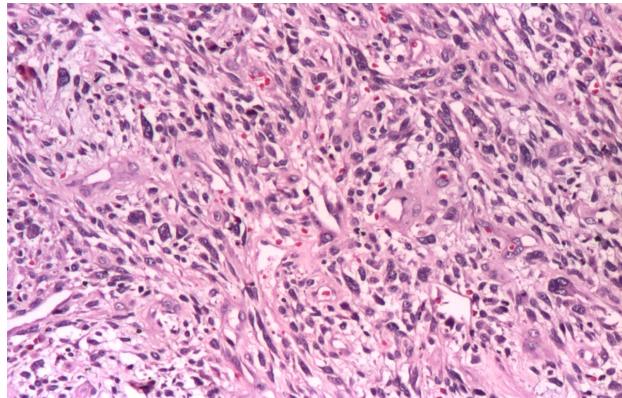


Figure 3 – Area with a variety of spindle, ovoid and large cells, showing nuclear atypia and pleomorphism (HE stain, ob. 10×).

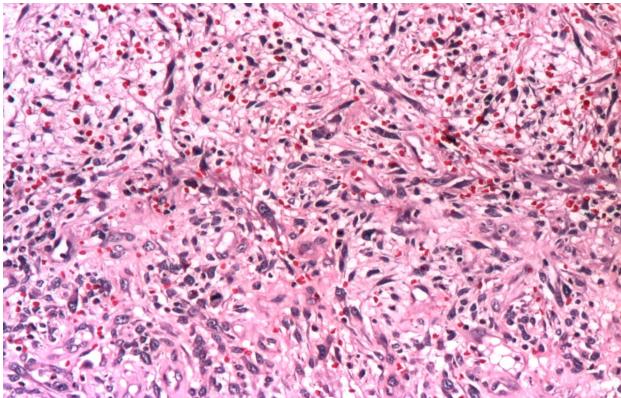


Figure 4 – Spindle shaped cells with marked nuclear atypia and pleomorphism (HE stain, 10×).

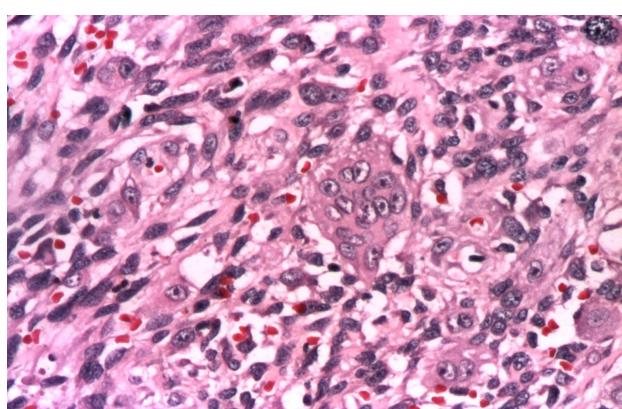


Figure 5 – Multinucleated giant cell in a dense mass of round-ovoid and spindle cells proliferation (HE stain, ob. 20×).

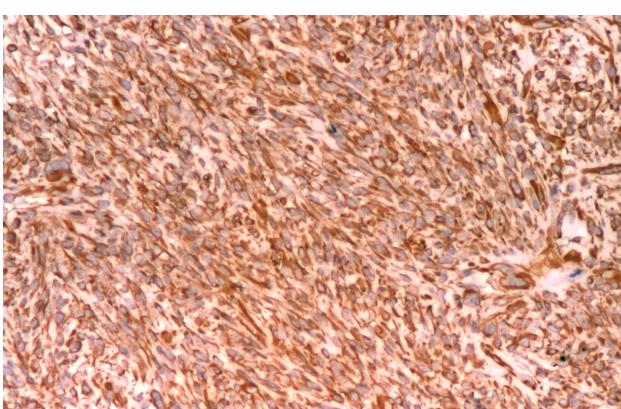


Figure 6 – Diffuse immunohistochemical stain for vimentin in spindle tumoral cells (IHC, ob. 10×).

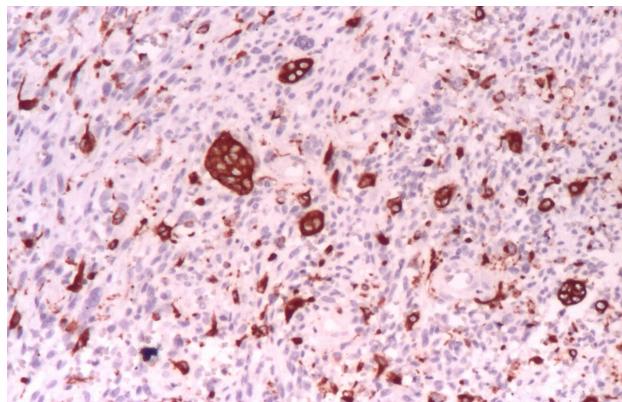


Figure 7 – IHC stain for CD68 in large and giant tumoral cells (ob. 10×).

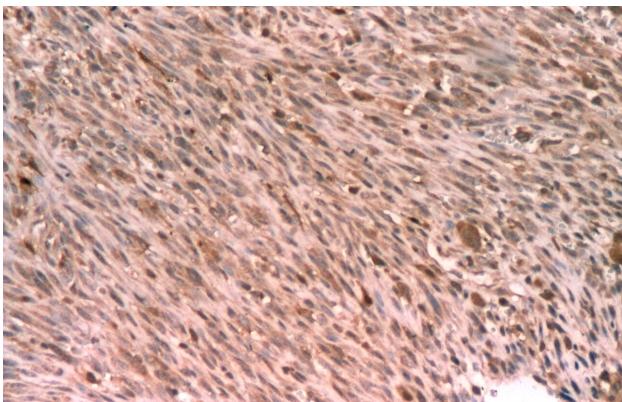


Figure 8 – Variable stain for S100 in spindle-shaped cells (ob. 10×).

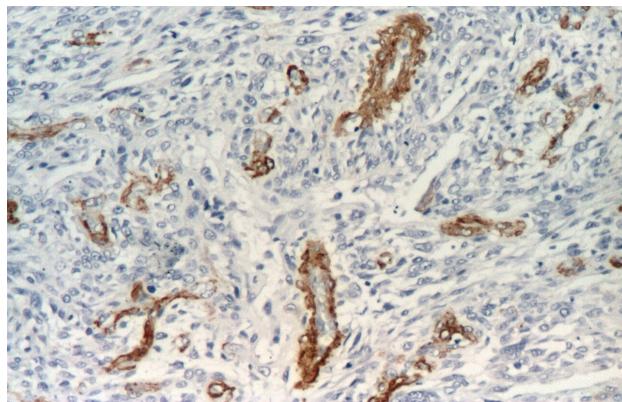


Figure 9 – Smooth muscle actin (SMA) positive in medium size vessels within the tumor mass (ob. 10×).

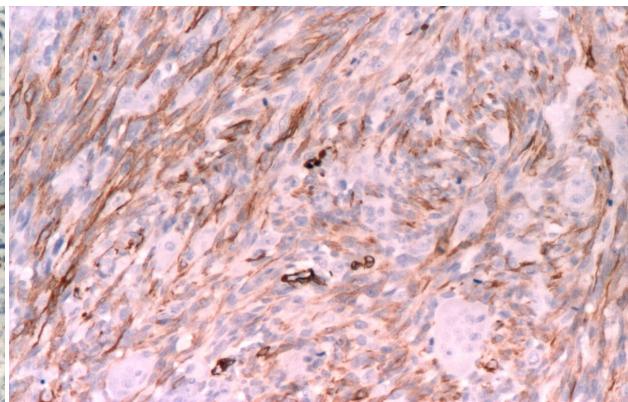


Figure 10 – SMA focally positive in spindle cells (ob. 10×).

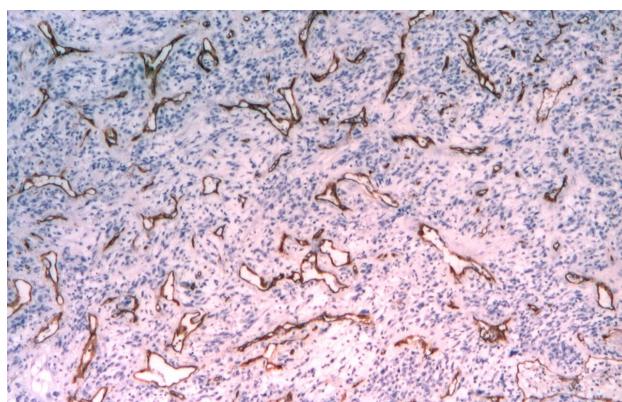


Figure 11 – CD34 positive in numerous vessels and negative in tumor cells (ob. 4×).

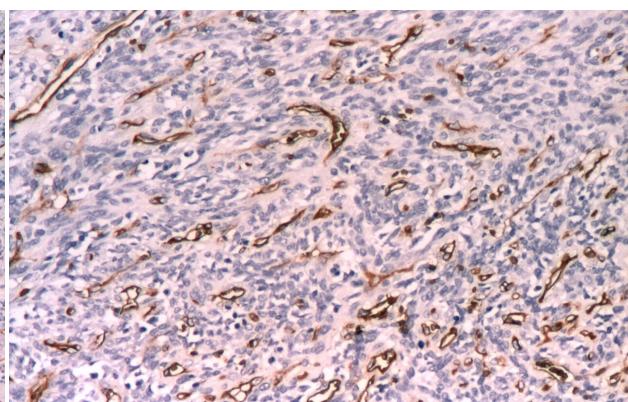


Figure 12 – EGFR-positive in blood vessels and negative in tumor cells (IHC, ob. 10×).

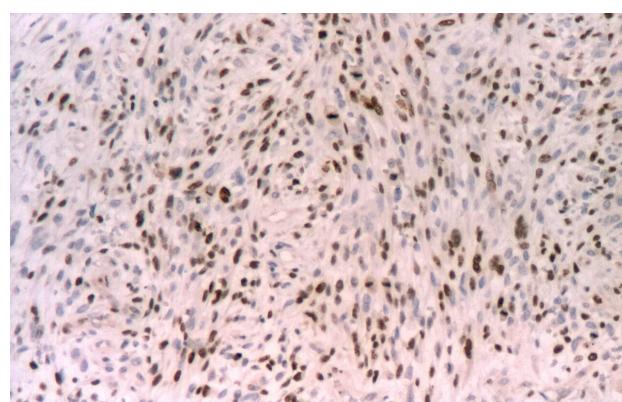


Figure 13 – IHC stain for Ki67 in about 30–40% of tumor cells nuclei (ob. 10×).

Discussion

Kauffman SL and Stout AP introduced the term MFH in 1961 in order to describe a histiocytic-like tumor with predominant fibroblasts [3].

Approximately 3 to 10% of all MFHs are localized in the head and neck and the most common localizations are in the naso-sinusal cavities (30%), the crano-facial bones (15–25%) and in the larynx (10–15%) [4, 7, 8]. Less than 50 cases (laryngeal MFH) have been published in medical literature [9, 10].

MFHS are histologically divided into five types: pleomorphic, myxoid, inflammatory, giant cells and angiomaticous [4].

Giant cell rich malignant fibrous histiocytoma accounts for 3–15% of all malignant fibrous histiocytomas [11]. This case is the first report of laryngeal giant cell malignant fibrous histiocytoma in medical literature (MEDLINE, PubMed search).

Laryngeal MFH is more commonly found at men patients rather than in women patients [12]. It appears mostly in middle-aged or older adults [4].

Frequently, the primary localization of laryngeal MFH at men is the glottis, whereas at women it is the subglottis [4, 7, 13].

Dysphonia is the most common primary symptom; dysphagia and dyspnea can also be observed, depending on the size and the localization of the lesion [10]. In our case, severe dyspnea with dysphonia, stridor and tiredness are due to large size of tumor and they were necessitated emergency tracheotomy.

A direct laryngoscopy and tumor biopsy or excision were essential for establishing a correct diagnosis.

In laryngoscopy, the most common presentation is that of epithelial nodules or polyps [8]. The great dimension is due to patient negligence.

The final diagnosis is based on showing that the tumor cells are histiocytes and that this is derived from the mononuclear phagocytic system – essential to distinguish it from other fibroblast like tumors [5].

Pathologically, MFH is composed of a mixture of spindle-shaped fibroblastic tumor cells and bizarre mononuclear histiocytic tumor cells arranged in whorl pattern beneath the epithelium, and some multinucleated giant cells. A pathological diagnosis, especially in head and neck tumors, is difficult [14].

The neoplastic cells were diffused positive for vimentin and histiocytic marker CD68, and focally positive in spindle cells for neuroectodermic marker (S100) and smooth muscle actin (SMA). In other authors' work, S100 and SMA were negative [6]. In our case, MFH had myofibroblastic features with immunoreactivity for SMA.

Differential diagnosis includes: pleomorphic rhabdomyosarcoma, fibrosarcoma, spinocellular carcinoma, angiosarcoma, hemangiopericytoma, pleomorphic liposarcoma and lymphoma [15].

Surgery with block resection of tumor is the first choice of treatment for the majority of authors and surgical technique varies, depending on the size and localization of the tumor [12, 16–20].

Radiotherapy and chemotherapy does not have any further advantages in comparison with surgical treatment [6]. Radiotherapy is used at patients with high risks, at recurrence of non-operated patients and in cases of metastasis to distance [15].

MFH of the larynx determines local and distance metastasis, especially to brain and lungs [4, 12, 16, 17, 21].

The prognosis depends on tumor differentiation, vascular invasion, size and on the existence or not of metastasis [8]. Approximately 60% of the patients may survive more than 5 years, and 40% of the patients may survive more than 10 years [6].

Conclusions

Malignant fibrous histiocytomas with giant cell of larynx are very rare mesenchymal neoplasm (this case seems the first reported). The diagnosis of MFH of larynx was difficult and the immunohistochemistry could have been helpful.

References

- [1] RESTA L., PENNELLA A., FIORE M. G., BOTTICELLA M. A., *Malignant fibrous histiocytoma of the larynx after radiotherapy for squamous cell carcinoma*, Eur Arch Otorhinolaryngol, 2000, 257(5):260–262.
- [2] WEISS S. W., ENZINGER F. M., *Malignant fibrous histiocytoma: an analysis of 200 cases*, Cancer, 1978, 41(6):2250–2266.
- [3] KAUFFMAN S. L., STOUT A. P., *Histiocytic tumors (fibromas, xanthoma and histiocytoma) in children*, Cancer, 1961, 14:469–482.
- [4] BARNES L., KANBOUR A., *Malignant fibrous histiocytoma of the head and neck. A report of 12 cases*, Arch Otolaryngol Head Neck Surg, 1988, 114(10):1149–1156.
- [5] POCH BROTO J., POCH VIÑALS R., FERNÁNDEZ S. M., SANZ J., MATA P., *Histiocitoma fibroso maligno de la base del cráneo*, Acta Otorrinolaringol Esp, 1987, 38(5):329.
- [6] ORTIZ BISH F., RUIZ CLEMENTE J., GALERA RUIZ H., DE MINGO FERNÁNDEZ E. J., MUÑOZ BORGE F., *Malignant laryngeal fibrous histiocytoma (MLFH). Report of two unusual cases*, Acta Otorrinolaringol Esp, 2004, 55(8):390–394.
- [7] BARNES L., FERLITO A., *Soft tissue neoplasms*. In: FERLITO A. (ed), *Neoplasms of the larynx*, Churchill Livingstone, Edinburgh, 1993, 265–304.
- [8] LISNER CONTRERAS I., RAMOS MACIAS A., DÍAZ M., CASTRO-LÓPEZ TARRADUELLE V., MEDINA ORTEGA C., *Fibrohistiocitoma maligno de laringe*, An Otorrinolaringol Ibero Am, 1997, 24(3):241–246.
- [9] KUWABARA H., SAITO K., SHIBANUSHI T., KAWAHARA T., *Malignant fibrous histiocytoma of the larynx*, Arch Otorhinolaryngol, 1994, 251(3):178–182.
- [10] SALEEM M., MCARTHUR P. D., HAINAU B., VELAGAPUDI S. B., *Fibrous histiocytoma of the larynx*, J Laryngol Otol, 1998, 112(12):1205–1207.
- [11] RAO S., ARCOT R., PAI V., PRATHIBA D., *Disseminated malignant fibrous histiocytoma (giant cell rich): a case report*, Indian J Pathol Microbiol, 2007, 50(4):795–797.
- [12] GODOY J., JACOBS J. R., CRISSMAN J., *Malignant fibrous histiocytoma of the larynx*, J Surg Oncol, 1986, 31(1):62–65.
- [13] BLITZER A., LAWSON W., BILLER H. F., *Malignant fibrous histiocytoma of the head and neck*, Laryngoscope, 1977, 87(9 Pt 1):1479–1499.
- [14] NAKAMIZO M., YOKOSHIMA K., SUGISAKI Y., *Malignant fibrous histiocytoma of the hypopharynx: a case report in a young adult*, J Nippon Med Sch, 2004, 71(4):301–305.
- [15] BERNALDEZ R., NISTAL M., KAISER C., GAVILÁN J., *Malignant fibrous histiocytoma of the larynx*, J Laryngol Otol, 1991, 105(2):130–133.

- [16] CANALIS R. F., GREEN M., KONARD H. R., HIROSE F. M., COOPER S., *Malignant fibrous xanthoma (xanthofibrosarcoma) of the larynx*, Arch Otolaryngol, 1975, 101(2):135–137.
- [17] KEENAN J. P., SNYDER G. G., TOOMEY J. M., *Malignant fibrous histiocytoma of the larynx*, Otolaryngol Head Neck Surg, 1979, 87(5):599–603.
- [18] MAJUMDER N. K., SHARMA H. S., SRINIVASAN V., *Malignant fibrous histiocytoma of larynx*. J Laryngol Otol, 1989, 103():219–221.
- [19] RAMADASS T., BALASUBRAMANIAM V. C., ANNAMALAI L., *Malignant pleomorphic fibrous histiocytoma of the larynx. A case report with review of literature*, J Laryngol Otol, 1984, 98(1):93–96.
- [20] BARBOSA F. H., DE OLIVEIRA RANGEL M., COELHO S. R., PATROCÍNIO J. A., PATROCÍNIO L. G., *Malignant fibrous histiocytoma of the larynx*, Intl Arch Otorhinolaryngol, São Paulo, 2006, 10(3):242–244.
- [21] FERLITO A., NICOLAI P., RECHER G., NAME S., *Primary laryngeal malignant fibrous histiocytoma: review of the literature and report of seven cases*, Laryngoscope, 1983, 93(10):1351–1358.

Corresponding author

Florin Anghelina, Assistant Professor, MD, PhD candidate, ENT Department, University of Medicine and Pharmacy of Craiova, 2–4 Petru Rareş Street, 200349 Craiova, Romania; Phone +40742–031 003, e-mail: dr_anghelina_florin@yahoo.com

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