

BRACHIAL PLEXOPATHY AS AN UNUSUAL FIRST SIGN OF A HEAD AND NECK CANCER: CASE REPORT

SUROVA V¹, SLAVIK P², CALKOVSKY V¹, HAJTMAN A.¹

¹Clinic of Otorhinolaryngology and Head and Neck Surgery, Jessenius Faculty of Medicine in Martin, Comenius University in Bratislava, and Martin University Hospital, Martin, Slovakia

²Department of Pathological Anatomy, Jessenius Faculty of Medicine in Martin, Comenius University in Bratislava, and Martin University Hospital, Martin, Slovakia

Abstract

Malignancies in the ENT (Ear, Nose, and Throat) area are mostly manifested by dysphagia, dysphonia, dyspnea, throat swelling, and other "traditional" head and neck symptoms. Sporadically, a primary tumor or metastasis can reach such a size and it can be localized in such an area in which it can cause the pathology of the brachial plexus. If this appears first, differential diagnosis may be more difficult.

In this article the authors review current literature knowledge and present the case of this unusual sign of a head and neck cancer at the Clinic of Otorhinolaryngology and Head and Neck Surgery, Jessenius Faculty of Medicine, Comenius University, and Martin University Hospital, Martin, Slovakia.

Key words: oropharynx; squamous cell carcinoma; brachial plexus; plexopathy

INTRODUCTION

Malignant tumors of head and neck are less common. In general, men over 40 years of age with a history of alcohol abuse, chronic nicotine use, promiscuity, and HPV infection are risk groups (1–3).

They are clinically manifested by non-specific prolonged symptoms such as e.g. unilateral nasal obstruction and pathological secretion, epistaxis (4), foreign body sensation, burning, throat scraping, painful swallowing, hoarseness, shortness of breath (3). These symptoms generally do not differ from the symptoms of inflammation in head and neck area. The warning sign should be unilateralism and duration of difficulties. Sometimes, the primary tumor may not cause any discomfort and it may be manifested by regional nodal metastases (5).

The appearance of metastases at the time of diagnosis of head and neck cancer ranges from 10 to over 40% according to the localization of the primary tumor (6). As a guideline can be used the statement that the upper neck metastases are from the head and neck, and the lower neck metastases are usually from the thyroid gland and from the thoracic and abdominal organs, but it is not always this way (7). After the lymph node is infiltrated by malignant cells, the lymph flow may change and, as a result, metastatic involvement of retrograde or contralateral nodules may occur (8). Typically, this swelling is unilateral, palpably stiff, asymptomatic, and slowly growing (5). In more advanced stages, the surrounding structures of lymph node are infiltrated and fixed, eventually inflammatory and necrotic changes may occur (9). Patients often palpate a lump on their necks when metastases reach larger size. They do not pay attention to smaller nodes because they consider them a

Corresponding author: Assoc. prof. Vladimir Calkovsky, MD, PhD.; e-mail: vladimir.calkovsky@uniba.sk

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transitory phenomenon. Likewise, the difficulties such as scratching or feeling foreign body in the throat are ignored. Their attitude to symptoms also results from socio-economic status, a history of alcohol abuse, and oral hygiene levels that are involved in etiology. Therefore, they visit the doctor only in the advanced stage of the disease.

Herein we present a case of a patient in whom the head and neck cancer manifested as the brachial plexus paresis due to its cervical metastasis.

CASE REPORT

A 47-year-old patient visited the general practitioner for the first time at the end of November 2018. He was complaining about cervical pain. Elevation of his right upper extremity was painful. Furthermore, painful, limited flexion in the C-spine was detected. Non-steroidal anti-inflammatory drugs and muscle relaxants were prescribed. In the beginning of December 2018, a general practitioner sent the patient to the orthopedist because of persistence of the sensitivity and pain of the shoulder, distal C-spine, and prevertebral area on the right side. No significant arthritic changes of the right shoulder joint were detected on X-ray examination. The orthopedist diagnosed adhesive capsulitis of the shoulder. Depomedrol was injected intra-articularly into the right shoulder joint and into the C5-C6 region, Diclofenac was added to the treatment. Subsequently, the patient's condition was slightly improved.

On neurological examination, swelling on the right side of the neck was detected (Fig. 1). Motility of acral part of the right upper limb was good. The patient did not perform flexion in elbow and elevation of the right upper limb (Fig. 2), but the passive movement in his right shoulder was not limited, skin sensitivity was preserved.

Fig. 1 Mass on the right side of neck, atrophy of the right shoulder

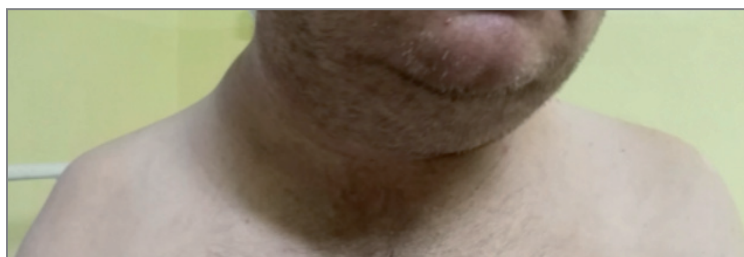


Fig. 2 Patient is trying to elevate both upper limbs



The patient was diagnosed with upper type of brachial plexus palsy, motor lesion in the shoulder and arm, thoracic outlet syndrome was considered in differential diagnosis. During the recommended hospitalization at the neurological department ultrasound examination of the neck was performed. A non-homogeneous mass on the right side of neck, exceeding the size of the probe, was dominated in the finding. Only MR imaging revealed complex pathology (Fig. 3). There was extensive lymphadenopathy, the largest lymph node was dorsal from the right sternocleidomastoid muscle at level III and IV, in a total size of $53 \times 56 \times 67$ mm. Pathological lesion was centrally necrotic, it pushed internal jugular vein and common carotid to the midline, infiltrated sternocleidomastoid muscle was dislocated ventrally. Caudally the lesion interfered with the supraclavicular region and it compressed the right brachial plexus without visible infiltration. It was in close contact with another pathologically altered lymph node cranially in the submandibular region ($31 \times 28 \times 33$ mm) which compressed vascular structures and the right sublingual salivary gland. Other pathologically altered lymph nodes up to 16×14 mm in size were found in the right posterior cervical space. Right longus capitis muscle was prevertebrally parasagittally pathologically infiltrated within $16 \times 21 \times 54$ mm. In addition, asymmetry in the area of the right lateral wall of the oropharynx was described and there was a soft tissue lesion in the tonsillar area of 10×25 mm (Fig. 4).

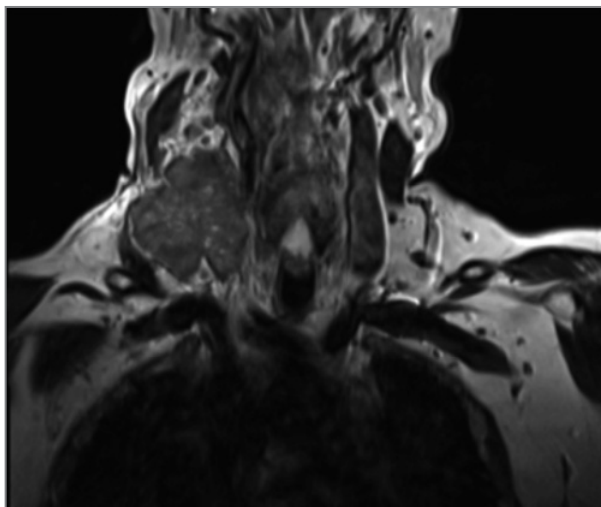


Fig. 3 Coronal MRI (T2-weighted) of neck with dominant cervical lymphadenopathy

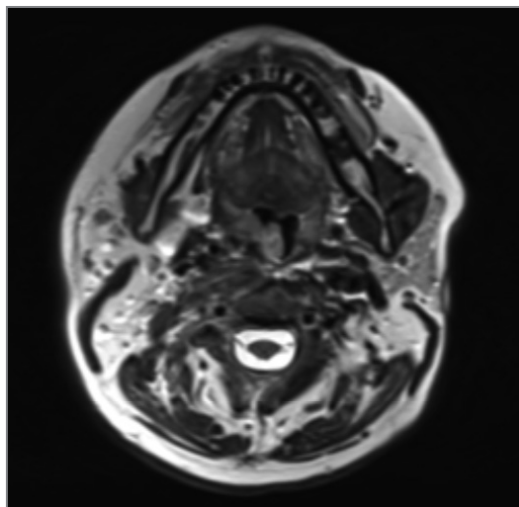


Fig. 4 Transversal MRI (T2-weighted) shows soft tissue lesion in the right tonsillar area

In the beginning of January 2019, the patient's condition deteriorated. Especially his breathing was difficult, he reported that the swelling of his neck was growing every day, swallowing was not a problem. He was sent by the general practitioner to the otorhinolaryngologist because of neck swelling and dyspnea. ENT specialist confirmed the tumor infiltration of the right tonsil and numerous fixed palpable resistances on the right side of neck in the area of swelling. Directoscopy with excision for histopathological examination under general anesthesia was indicated. Peroperatively, the right tonsil was completely infiltrated by the fragile, exophytic, bleeding tumor which infiltrated the anterior and posterior pharyngeal arch. The uvula and the soft palate appeared intact, the tumor did not reach the contralateral side. The structures of the hypopharynx and larynx were with no pathological findings. Histologically (Fig. 5,6), the tumor was verified as invasive squamous cell carcinoma of the oropharynx and its lateral wall, p16 was positive, clinically with massi-

ve ipsilateral metastasis of neck lymphatic system, T3 N3 Mx, III, G: X (only mucosal and carcinoma fragments were histopathologically examined). In terms of valid oncosurgical principles, the tumor was evaluated as inoperable. The patient was sent to the oncology department in the place of residence for non-surgical oncological treatment.

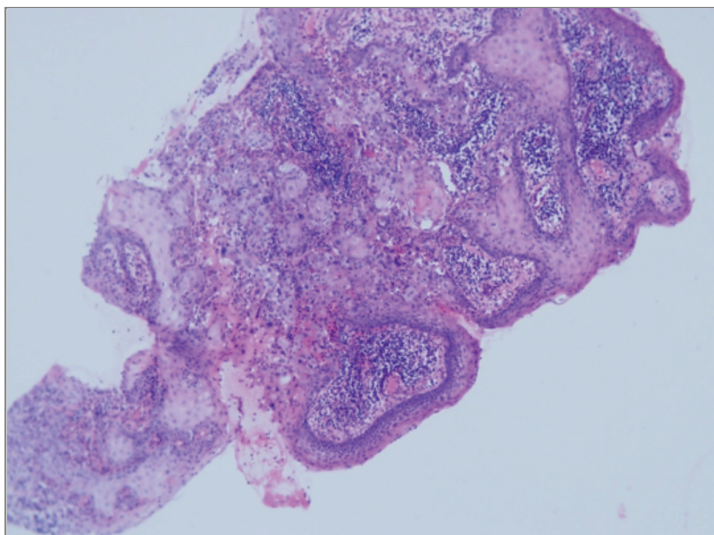


Fig. 5 Hematoxylin-eosin staining of the lesion at 100x magnification

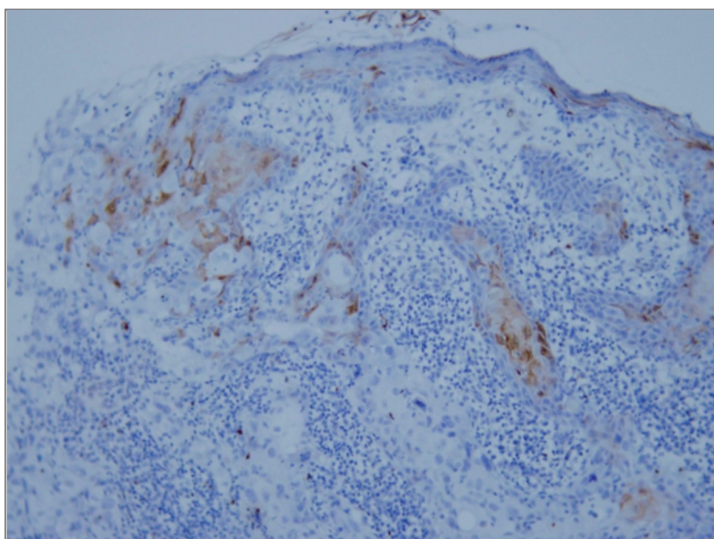


Fig. 6 P16 immunohistochemical staining of the lesion at 200x magnification

DISCUSSION

Brachial plexus dysfunction is a well-known complication of cancer (10). It often occurs with advanced systemic tumor disease at the time of local or regional progression of the primary tumor. Tumor plexopathy affects 1 out of 100 cancer patients, 0.43 per cent of such patients suffer from brachial plexopathy (11). In general, both primary and secondary tumors may be causally involved. Secondary tumors as a cause of brachial plexopathy are more common, then it is called metastatic brachial plexopathy (12). Metastatic brachial

plexopathy appears more frequently in elderly patients and its incidence increases with age (13). The frequency is higher in certain histological subgroups (11). The most common tumors affecting the brachial plexus are lung and breast tumors, where both the primary lesion and metastases in the axillary or supraclavicular region can be considered (14). Head and neck tumors may occasionally grow downwardly affecting the plexus from the top (10). They may rarely metastasize to axillary nodes and affect the plexus from the bottom (11). Patients complain most frequently of the painful axilla and shoulder. Motor and sensory deficits are also presented in a large group of patients (15). Another cause of brachial plexopathy must be excluded, namely degenerative and other bone diseases, trauma, infections, post-infectious and vascular causes (16), and in the oncological population plexopathy due to radiation fibrosis (12). Metastatic brachial plexopathy is characterized by the development of symptoms in days or weeks (10). The method of choice for imaging of brachial plexus is MRI, it provides better soft-tissue discrimination and it shows the entire course of the plexus from the cervical spine as well as the passage through the supraclavicular and axillary regions. Lymphadenopathy as a cause of brachial plexopathy is usually manifested as a mass that can surround the neurovascular sheath and cause its compression. An infiltrating tumor may be more difficult to detect. It is manifested as thickening, which is a nonspecific sign and a definitive conclusion is given only by a histopathological examination (14).

There are only sporadic cases of head and neck tumors that have been manifested by brachial plexopathy in the literature.

In our case report brachial plexopathy was the first sign of cancer. In general, the interval from malignancy diagnosis to the first signs of brachial plexopathy is broad. In a study of brachial plexus lesions in cancer patients this interval was from 0 to 276 months (23 years), with a median of 18 months, but it includes patients with brachial plexopathy after radiotherapy in the neck area. In 17 patients out of 55 brachial plexopathy was the first symptom of cancer (10).

CONCLUSION

Head and neck tumors with a tendency to invade inferiorly affect the upper and middle brachial trunk. Metastases of the cervical lymphatic system as a cause may also contribute to brachial plexopathy. This may muddy the clinical picture and lead to dilemma in diagnostics or in the localization of primary cause (10), which was also a problem in the presented case study.

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