

## Special Article – Head and Neck Cancers

# Peripheral Facial Paralysis Caused by Intratympanic Prostate Cancer Metastasis

**Becker C\* and Offergeld C**

Department of Otorhinolaryngology–Head and Neck Surgery, University of Freiburg, Germany

**\*Corresponding author:** Christoph Becker, Department of Otorhinolaryngology–Head and Neck Surgery, University of Freiburg, Freiburg, Germany**Received:** October 17, 2016; **Accepted:** December 09, 2016; **Published:** December 12, 2016**Abstract****Objective:** To illustrate, that a peripheral paralysis of the facial nerve can be caused by metastatic lesions of the temporal bone and to underline the importance of a profound diagnostic procedure.**Methods:** Case report and literature overview.**Results:** Report of a 75-year-old patient with a new onset peripheral paralysis of the facial nerve on the right side and a history of ear operation and prostate cancer years before. Due to an opacification of the mastoid in the computed tomography a mastoidectomy was performed. The histological examination evaluated a metastasis of the prostate cancer.**Conclusion:** Peripheral paralysis of the facial nerve is often idiopathic or caused by inflammation. Our reported case highlights the meaning of further differential diagnosis, especially in cases with a particular history of malignancy.**Keywords:** Peripheral facial paralysis; Prostate cancer; Intratympanic metastasis; Temporal bone pathology; Lateral skull base

## Introduction

In Germany, prostate cancer is the most common cancer in men and overall the third most common cancer leading to death [1]. The prevalence of this malignant disease has increased steadily in recent decades [1]. This fact can be primarily attributed to the improved methods of early detection [2]. Distant metastases are found in most cases in the skeletal system, which is why a thorough staging of the skeleton is fundamental. We report the case of metachronous multiple bone metastases, which initially manifested as peripheral facial paralysis.

## Case Presentation

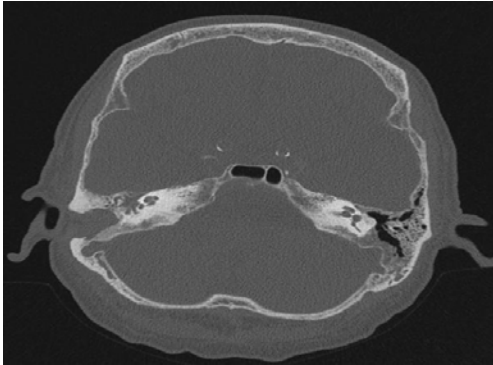
A 75-year-old patient was referred to our hospital from the neurological clinic with new onset right-sided peripheral facial paralysis. With Computed Tomography (CT) including thin layering of the temporal bone an intracranial hemorrhage was ruled out. However there was a complete opacification of the right mastoid and middle ear, which led to a suspected diagnosis of right-sided acute mastoiditis. There was some bone thinning with simultaneous sclerotic parts. A destruction of the ossicles was not identifiable (Figure 1). The clinical findings at admission showed an externally normal temporal region without pain or redness at the mastoid. The otoscopy showed a perforation of the tympanic membrane, the remaining eardrum was thickened but not flushed. Furthermore, there was intratympanic granulation tissue and glue-like secretions misleading primarily to chronic otitis media. The patient reported to have had ear surgery decades before. Pure tone audiometry revealed a mixed hearing loss on the right ear with symmetrical bone conduction, tuning fork testing was typical for a conductive hearing loss on the right side. An ultrasound examination excluded an intraparotid mass on both sides. Due to the history and the complete

opacification of the right mastoid we performed a mastoidectomy of the right side immediately. Intraoperative the “opacification” proved to be a rubbery, semi-solid, reddish mass which partially destructed the ossicular chain in the middle ear. It was not primarily resected in total due to their infiltrative growth and intraoperative extensive hemorrhage. There were no signs of an acute mastoiditis. Several samples were taken for histopathological examination, we also performed a tympanoplasty using cartilage and perichondrium.

The histological diagnosis - supplemented by a (later) testing of specimens for expression of Prostate-Specific Antigen (PSA) – was an intratympanic metastasis of prostate cancer, most likely starting from the temporal bone. Ten years earlier a radical prostatectomy with regional lymphadenectomy due to an adenocarcinoma of the prostate was performed. After an unclear rise of the PSA the patient had a chemotherapy a few years later, whereupon the values normalized. In regular urological controls over the years again slowly rising PSA levels were detected. The measurement of PSA after mastoidectomy showed a value of 1126ng/ml (normal value up to 4.4ng/ml). A bone scintigraphy revealed disseminated metastasis and a palliative chemotherapy was initiated.

## Discussion

Bell's palsy is the most frequent reason for peripheral facial paralysis, but also inflammatory diseases are seen as an important etiology [3]. Besides these reasons also tumors of the head and neck region are often directly or indirectly responsible for disorders of the facial nerve. Objects of special attention are the major salivary glands, especially the parotid gland [4]. Metastases which can lead to an affection of the facial nerve in the nerve course are much rarer but should also be included in the differential diagnosis. Yildiz et al. reported a metastasis of a small cell lung cancer, Yang et al. the



**Figure 1:** Computed tomography (axial plane) after patients' admission to our hospital. Status post mastoidectomy on the right side years before. Complete opacification of the right mastoid and middle ear. The course of the facial nerve is not definable.

metastasis of a hepatocellular carcinoma as a cause of facial paralysis [5,6]. In the first case beside the short-term facial nerve paralysis the patient suffered also from a dysphonia, unilateral vocal cord palsy and weight loss, which quickly led to the (main) diagnosis of an intrathoracic malignancy. Yang et al. reported additional unilateral facial pain, which led to further diagnostics. In our case such additional symptoms were not identifiable.

Weiss et al. presented two cases of facial nerve paralysis due to adenocarcinoma metastasis originating from breast and gastroesophageal junction cancer, respectively [7]. They also pointed out that a progressive, unilateral, peripheral facial nerve paresis over weeks is strongly suggestive of neoplasm [7].

Various carcinoma tend to develop bone metastases, for example lung, breast, prostate and thyroid cancer [8]. Especially in facial paralysis patients with a history of this carcinoma a thorough examination including magnetic resonance imaging is essential.

## Conclusion

Our reported case lines up with the other cases of unexpected

primary tumors with distant metastases. It becomes clear that tumors which tend to primary bone metastasis need a special diagnostic consideration. Neuroimaging is essential in patients with history of cancer, especially with cancer that potentially causes bone metastasis. However it may - as in our case - come to a vague coincidence of clinically definite symptoms, medical history and inconclusive diagnostic imaging. In this situation a prompt biopsy is obligatory to ensure an accurate diagnosis.

## References

1. Robert Koch-Institut. Verbreitung von Krebserkrankungen in Deutschland. Entwicklung der Prävalenzen zwischen 1990 und 2010. Beiträge zur Gesundheitsberichterstattung des Bundes. RKI, Berlin. 2010.
2. Hatakeyama S, Yoneyama T, Tobisawa Y, Ohyama C. Recent progress and perspectives on prostate cancer biomarkers. *Int J Clin Oncol*. 2016.
3. Luijmes RE, Pouwels S, Beurskens CH, Kleiss IJ, Siemann I, Ingels KJ. Quality of life before and after different treatment modalities in peripheral facial palsy: A systematic review. *Laryngoscope*. 2016.
4. Lima RA, Tavares MR, Dias FL, Kligerman J, Nascimento MF, Barbosa MM, et al. Clinical prognostic factors in malignant parotid gland tumors. *Otolaryngol Head Neck Surg*. 2005; 133: 702-708.
5. Yildiz O, Buyuktas D, Ekiz E, Selcukbiricik F, Papila I, Papila C. Facial nerve palsy: an unusual presenting feature of small cell lung cancer. *Case Rep Oncol*. 2011; 4: 35-38.
6. Yang JI, Kang JM, Byun HJ, Chung GE, Yim JY, Park MJ, et al. Metastatic hepatocellular carcinoma presenting as facial nerve palsy and facial pain. *Korean J Hepatol*. 2011; 17: 319-322.
7. Weiss MD, Kattah JC, Jones R, Manz HJ. Isolated facial nerve palsy from metastasis to the temporal bone: report of two cases and a review of the literature. *Am J Clin Oncol*. 1997; 20: 19-23.
8. Chow E, Hird A, Velikova G, Johnson C, Dewolf L, Bezjak A, et al. EORTC Quality of Life Group; Collaboration for Cancer Outcomes Research and Evaluation. The European Organisation for Research and Treatment of Cancer Quality of Life Questionnaire for patients with bone metastases: the EORTC QLQ-BM22. *Eur J Cancer*. 2009; 45: 1146-1152.