



Cutaneous Squamous Cell Carcinoma Metastasize to Parotid Gland: A Case Report

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Abstract: Parotid carcinoma is a malignant neoplasm derived from epithelial cells of the parotid salivary gland. Most salivary gland neoplasms are benign (80%) and another 20% are malignant. The prevalence of parotid squamous cell carcinoma is rarely found to be only 0.3% -1, 5% of all malignancies of the head and neck. Most of the squamous cell carcinoma in the parotid is due to the metastasize of malignancy of the skin and the head (1-2%). Its diagnosis is established by history taking, clinical examination, ultrasonography, and fine needle aspiration (FNA) biopsy. Definitive diagnosis is obtained by histopathological examination. Treatment of parotid carcinoma is parotidectomy, either superficial, total, or radical and followed by radiotherapy.

Keyword: parotid carcinoma, squamous cell carcinoma, facial nerve palse, parotidectomy

Introduction

Parotid carcinoma is a malignant neoplasm derived from parotid gland epithelial cells. The parotid gland is the largest salivary gland among 3 major salivary glands (parotid, submandibular and sublingual gland) which located in the front, lower and back of ear area.¹

Most salivary gland neoplasms are benign (80%), and another 20% are malignant. There are several kinds of histopathologic features of parotid neoplasms, namely mucoepidermoid carcinoma, acinic cell carcinoma, salivary duct carcinoma, expleomorphic carcinoma, adenoid cystic carcinoma.² Squamous cell carcinoma of the parotid is rare, it's about 0.3% -1.5% of all malignancies of the head and neck. Most squamous cell carcinoma of the parotid is due to metastatic lesion of malignancy of the facial and head skin (6-8%),^{3,8} This occurs because some areas of the facial lymphatic drainage lead to a group of periparotid and intraparotid glands. These areas include the frontal, temporal, superior-inferior palpebra, posterior of cheek, the anterior ear, the external acoustic meatus, and the preauricula-postauricula, while the direct invasion of

cutaneous squamous cell carcinoma to the parotid glands is rare. Squamous cell carcinoma is the the most metastatic form of carcinoma to the parotid gland, with malignant melanoma being the second leading cause.

Parotid carcinoma due to spreading from carcinoma of the skin according to A. Franzen is associated with increase in expression of epidermal growth factor, aggressivity and has a poor prognosis, with high rates of local recurrence and mortality. A poor prognosis is also experienced in tumors with a diameter of 6 cm or more with a facial nerve paralyze.^{6,7} The 5-year survival rate of skin carcinoma metastasizing to the parotid gland is 11.5-43%, and the prognosis is worse if the tumor involves both parotid gland and lymph node of neck. In a study by Pastore, he mentioned that metastatic lesion of skin carcinoma to the parotid gland has been known about 18 months from the time of first diagnosis of primary tumor was established, with an average time of 12-20 months.⁸

Signs and symptoms of parotid cancer include rapid growth, pain, paralyze of facial nerve, tumor infiltration to the skin, and lymph node enlargement. Pain may appear as part of an inflammatory or infection process in 44% of patients. The presence of facial nerve paralyze should be regarded as parotid malignancy no matter how large the size of the tumor is, in some 12-19% of patients. Diagnosis is obtained through anamnesis, clinical examination and history of previous treatment / tumor surgery, imaging investigation, and histopathology. Preoperative diagnostic tools may use ultrasonography, Computed Tomography Scan (CT-scan), Magnetic Resonance Imaging (MRI), and fine needle aspiration (FNA) biopsy. Ultrasonography can differentiate solid mass with cystic but its weakness is that it could not see clearly the deep parotid lobe. A CT scan is used to determine extension / invasion of the tumor to the surrounding structures such as the mandibular bone, temporal bone or skull base. While MRI has the advantage of being able to show clear tumor boundaries compared to CT scans, in addition MRI is excellent in evaluating facial nerve, deep parotid lobe and knowing tumors in the parapharyng cavity. A fine needle aspiration biopsy has a sensitivity and specificity of 52% and 92% respectively. The standard diagnostic is histopathology.^{4,5}

Enforcing the diagnosis of metastatic lesion to parotid from cutaneous squamous cell carcinoma is not easy, it must be done by seeing the patient's clinical condition, dig up history of patients and history of the disease first carefully then combined with existing investigations. Therapeutic management involves surgery (parotidectomy) followed by adjuvant radiotherapy being the current primary choice. Surgery alone needs to consider several things, including surgical risks and benefits, where preoperative safety and anticipation of postoperative neurologic deficits should be considered carefully. Franzen says neck dissection of parotid carcinoma metastasized from cutaneous squamous cell carcinoma should be done although clinically there is no evidence of lymph node of the neck enlargement.⁷ Parotidectomy in parotid tumors is divided into 3, superficial, total and radical. Superficial parotidectomy is performed on benign tumors or small malignant tumors that are confined to the superficial lobes. Total parotidectomy elevates the entire superficial lobe tissues (located superficially from the facial nerve), as well as the entire deep lobes. This action is used in high grade primary parotid cancers and primary parotid cancers that metastasize to intraparotid lymph node or neck lymph node. Both superficial and total parotidectomies both preserve the facial nerve. Radical parotidectomy elevates all parotid glands (superficial and deep lobes) and sacrifices the facial nerve, in conditions when the facial nerve is infiltrated by the tumor.^{2,5}

Case Presentation

A 57-year-old woman came to Surgery Clinic at Dr. Soetomo General Hospital Surabaya with a complaint of lump on the left cheek in front of the ear. The lump was first felt since 5 years ago as the size of marbles, growing slowly without pain. The last five months the patient felt the lump was enlarged quickly, reddish color and sometimes accompanied by pain. Then she decided to go to Mojokerto Hospital. She then was performed a fine needle aspiration biopsy on the parotid sinus node with the pathological result was squamous cell carcinoma (October 2017), then she was referred to the dr. Soetomo general hospital Surabaya for further examination and treatment. When she came to polyclinic of surgery, there was a hard solid lump, unclear boundary, measuring 10 x 9 x 5 cm and attached to the base, with hyperemic skin on top of it. The left ear lobe was pushed upward by tumor. No asymmetric face were found. No enlarged regional lymph nodes were found. The patient had undergone left eye exenteration surgery about 6 years ago (October 2012) in dr. Soetomo general hospital as she experienced tumor in the inferior palate of the left eye with postoperative pathological result was squamous cell carcinoma poorly-differentiated.



Figure 1. Pre-operation clinical photo. Left facial nerve lesion was visible

We assessed the patient with a left parotid carcinoma which is probably a metastatic lesion of an cutaneous squamous cell carcinoma of left inferior eyelid. Then we did a head and neck CT Scan with contrast. The CT scan results was enhanced solid mass measuring 6.71x 5.4 x 6.04 cm in the left parotid region which we saw a contrast enhancement on the tumor with firm, regular edge. The mass involved the left parotid gland, extended into skin tissues, attached to the left masseter muscle with unclear borders, extended into the soft tissue of the left zygoma region and destroys the left zygomatic bone. Based on history taking, clinical examination and diagnostic examination that we did therefore this patient decided to undergo left total parotidectomy.

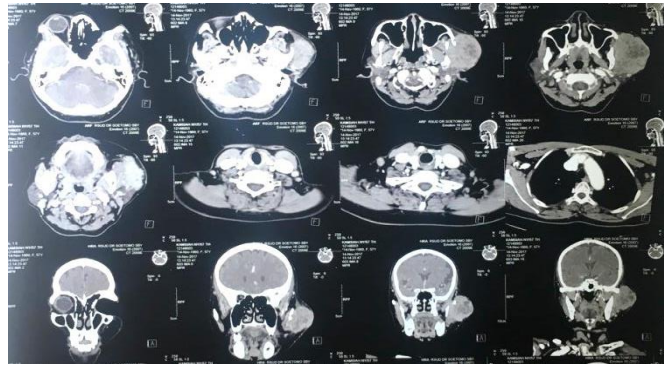


Figure 2. Head and Neck CT with contrast

When the patient was admitted in RSUD Dr. Soetomo 4 months after first admission in polyclinic of surgery, she got peripheral left facial nerve paralyze, with reddish tumor mass indicating inflammation and an ulcer has emerged in the inferolateral part of the tumor, no bleeding was present. Then the patient decided to undergo radical parotidectomy surgery and facial reconstruction with supraclavicular artery perforator flap with general anesthesia. The patient was positioned supine, the neck hiperextentioned and rotated to the right. Disinfection was conducted using Alcohol 70%. The incision was performed circling the mass of the tumor with a 1-2 cm margin, deepened layer by layer. It was found that a solid mass of 8x9x5 cm parotid sinus tumor infiltrated the masseter muscle and destructed the left zygomatic bone. We performed a tumor excision by removing part of the sinus mass muscle as well as zygomatic bone until healthy bone margin. During surgery we obtained enlargement of lymphnode in left neck level 1B then we did frozen section/*Vries Coupe* with the result is metastatic squamous cell carcinoma. With Schobinger modified incision, modified radical neck dissection type III was performed. A 7.5 × 9 cm defect was covered by a supraclavicular artery perforator flap. Bleeding treated, wound surgery was closed with stitches layer by layer and then of redon drain size # 12 Fr was inserted. The operating specimens were examined in Anatomical Pathology Laboratory of Dr. Soetomo General Hospital Surabaya.



Figure 3. Incisional design





Figure 4. Durante Operation

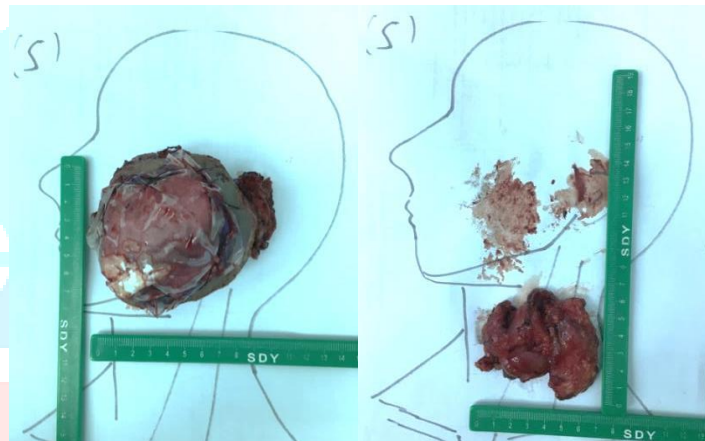


Figure 5. Radical parotidectomy specimen and modified radical neck dissection type III



Figure 6. Post-surgery clinical photo

After a few days of postsurgical treatment, the patient is discharged. In follow-up patient at policlinic of surgery, the postsurgical wound is good, flap was viable. The results of the histopathology examination showed microscopically that the tissue pieces with trabecular-traced tumor growth and in the nest consisted of the proliferation of cells with spherical oval, pleomorphic, rough chromatin, some with prominent core children, mitotic 30/10 HPF. Tumors grow invasively to the edges of resection. Around the tumor appears a salivary gland without certain abnormalities. No visible lymphnode invasion. No perineural invasion appears, with the conclusion of a moderately differentiated squamous cell carcinoma. While left neck lymphnode

showed pieces of salivary gland tissue and 10 lymph nodules. Metastasis of tumor cells in 1 salivary gland and 10 lymph nodules were found.

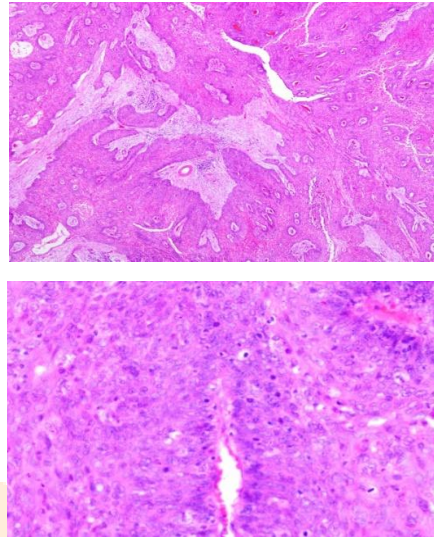


Figure 7. Pathological examination showed squamous cell carcinoma result

Discussion

Parotid carcinoma is a malignant neoplasm derived from epithelial cells of the parotid salivary glands.¹ Most salivary gland neoplasms are benign (80%), and the other 20% are malignant. The prevalence of parotid squamous cell carcinoma is rarely found in 0.3% -1.5% of all malignancies of the head of the neck. Most squamous cell carcinoma of the parotid is due to metastatic lesion of malignancy of the facial and head skin (6-8%),^{3,8} This occurs because some areas of the lymphatic drainage face lead to a group of periparotid and intraparotid glands. This area includes the frontal, temporal, superior-inferior palpebra, posterior cheek, anterior ear, external acoustic meatus, and preauricula-postauricula.

Squamous cell carcinoma is the most metastatic carcinoma lesion to the parotid gland. When we are dealing with parotid squamous cell carcinoma, efforts must be done to locate the primary tumor site. Parotid carcinoma due to metastasize from skin carcinoma is associated with increase expression of epidermal growth factor, aggressive when not immediately recognized and treated with a poor prognosis, with high rates of local recurrence and morbidity and mortality. The 5-year survival rate of skin carcinoma metastasizing to the parotid gland is 11.5-43%, and the prognosis is worse if the tumor involves both parotid gland and neck lymphnode. In a study by Pastore, he mentioned metastasize to the parotid gland known about 18 months from the time of first diagnosis of primary tumor was established, with an average time of 12-20 months.^{6,7,8}

In this case, we asked the patient when the patient first felt the lump in the left inferior eyelid appeared, around January 2012 and on October left eye exenteration surgery was conducted, then January 2013 (12 months later from the left inferior eyelid tumor) the patient complained about a new lump in front of the left

ear, in the sense of cutaneous squamous cell carcinoma of the eyelid skin which metastasizing to the parotid gland within the span of 12 months. This is in accordance with the literature according to Pastore. Signs and symptoms of parotid cancer include rapid growth, pain, paralasal facial nerve, tumor infiltration to the skin, and neck lymph node enlargement. In this case the patient's parotid tumor complained of pain and reddish color indicates an ongoing inflammatory process. Ulcers in inferolateral tumors as a sign of tumors have grown aggressively and in advanced stages where tumor growth rates could not be matched by the formation of neovascularization. The face of the patient is asymmetric on the left side due to tumor growth that has invaded the facial nerve.

Investigations in particular CT-scans are helpful in diagnosing and knowing the extent of the tumor and the extent to which the tumor undergoes extension to surrounding structures such as muscle or bone so that we will not make mistakes during the next surgery. In this patient the tumor destructed left zygomatic bone, hence we did osteotomy until healthy bone margin. In this case we assumed that the tumor that appeared on the left parotid of our patient is a metastatic lesion from a tumor in the left eyelid which had been performed left eye exenteration surgery in 2012, based on pathological results of left eye exenteration surgery, parotid fine needle aspiration biopsy and parotidectomy results that was leading to squamous cell carcinoma. Management of parotid carcinoma therapy due to metastatic squamous cell carcinoma of skin is a total parotidectomy followed by adjuvant radiotherapy resulting in lower relapse rates and higher survival rates compared with surgery alone. When intraoperative tumors invade the facial nerve or it is known to have a facial nerve paralyze clinically on preoperative setting, the choice of surgery is radical parotidectomy.^{5,6} In this case because the facial nerve was already invaded by the tumor, radical parotidectomy of the left parotid gland was performed which is done by removing the entire tissue of the superficial and deep parotid lobes and the left facial nerve. Franzen says neck dissection of parotid metastasizing from cutaneous squamous cell carcinoma should be done although clinically there is no evidence of neck lymph node enlargement.⁷ Often the metastasize to the neck lymph node neck is known to be happened intraoperatively so that in this case a neck dissection was performed.³ In our clinical case and radiological finding we did not find neck lymph node involvement, but during surgery we found left neck lymph node to be on level 1B which then we done frozen section/*Vries Coupe* and the pathological result was metastatic squamous cell carcinoma so finally we did radical neck dissection type III.

Conclusion

Parotid gland squamous cell carcinoma is rare and most of the cases presented are metastatic form of skin carcinoma in the temporal, frontal and periorbital. A careful history of tumor growth and previous medical history and careful clinical examination should be made to make a good clinical diagnosis. Selection of appropriate investigations is necessary to confirm the diagnosis is also important, in this case the CT scan and fine needle biopsy.

Selection of appropriate therapy modality is required for management in the case of locally advanced parotid carcinoma to avoid any residual possibility. Mastery of radical surgical techniques with reconstruction is necessary to obtain both functional and cosmetic outcomes..

Consent

No written consent has been obtained from the patients as there is no patient identifiable data included in this case report.

Data Availability

No data was used to support this study.

Conflicts of interest

No competing interests declared.

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Authors' Contribution

F.M.P. conceptualized, interpreted, and wrote the manuscript. M.D.W., and N.I. reviewed the manuscript, supervised the study, and involved in the case management. F.M.P. reviewed and revised the manuscript. All authors read and agreed to published version of the manuscript.

References

1. Ho K, Lin H, et al. *An overview of the rare parotid gland cancer*. Head Neck Oncol. 2011; 3: 40. doi: 10.1186/1758-3284-3-40
2. To Victor SH, Chan Jimmy. *Review of Salivary Gland Neoplasms*. ISRN Otolaryngol. 2012; 2012: 872982. doi: 10.5402/2012/872982
3. Ying Yu-lan, Jonas T, et al. 2006. *Squamous Cell Carcinoma of the Parotid Gland*. 2006. Doi : 10.1002/hed.20360. Published online 10 February 2006 in Wiley Interscience
4. Gritzmann N. *Ultrasound of the salivary glands*. Laryngorhinootologie. 2009 Jan. 88(1):48-56; quiz 57-9
5. Cracchiolo JR, Shaha AR. *Parotidectomy for Parotid Cancer*. OtolaryngolClin North Am. 2016 Apr; 49(2): 415–424. doi: 10.1016/j.otc.2015.10.007
6. Lee JH, Shin H, et al. *A Case of Direct Invasion of Parotid Gland by Cutaneous Squamous Cell Carcinoma*. Arch CraniofacSurg Vol.14 No.2, 129-132. 2013. <http://dx.doi.org/10.7181/acfs.2013.14.2.129>
7. Franzen A, Buchali A, et al. *The Rising incidence of Parotid Metastases : Our Experience from Four Decades of Parotid Gland Surgery*. ActaOtorhinolaryngologicaItalica 2017;37:264-269; doi : 10.14639/0392-100X-1095
8. Pastore A, Ciorba A, et al. *Secondary Malignant Tumors of the Parotid Gland : not a Secondary Problem*. JBUON 2017; 22(2): 513-518