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OLGU SUNUMU

Metastasis to infraclavicular lymph nodes in head and neck cancer: a report of three cases

Baş-boyun kanserli üç olguda infraklaviküler lenf nodlarına metastaz

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Metastasis predominantly occurs via the lymphatic system in head and neck tumors. The disturbance of the lymphatic system in the cervical region resulting from neck dissection or radiotherapy may result in unusual patterns of metastasis in patients with recurrent tumors. This is more frequent when the recurrent tumor invades the myocutaneous flap used for the primary reconstruction. We encountered three patients (2 men, 1women) with infraclavicular lymph node metastasis. All were previously treated by surgery, postoperative radiation therapy, and reconstruction with the use of the pectoralis major myocutaneous flap.

Key Words: Axilla; carcinoma, squamous cell/surgery/radiotherapy; laryngeal neoplasms/surgery; lymph nodes/pathology; lymphatic metastasis; mouth floor; mouth neoplasms; neck dissection; neoplasm recurrence, local; parotid neoplasms; radiotherapy, adjuvant; surgical flaps.

Baş-boyun tümörlerinde metastaz lenfatik sistem aracılığı ile olmaktadır. Boyun diseksiyonu ya da radyoterapi uygulanmış boyunlarda lenfatik sistemin bütünlüğü bozulmakta ve özellikle reküren hastalığı bulunan olgularda beklenmedik bölgelere metastazlar görülmektedir. Bu durum, rekürren tümörün aynı bölgede rekonstrüksiyon amaçlı kullanılmış miyokutan flebi invaze ettiğinde daha yaygındır. Bu yazıda, baş-boyun kanseri nedeniyle cerrahi tedaviyi takiben rekonstrüksiyonları pektoralis majör miyokutan flep ile gerçekleştirilen ve radyoterapi uygulanan ikisi erkek üç hastada rastladığımız infraklaviküler bölgeye metastatik yayılım sunuldu.

Anahtar Sözcükler: Aksilla; karsinom, skuamöz hücreli/cerrahi/radyoterapi; larenjeal neoplazmlar/cerrahi; lenf nodu/patoloji; lenfatik metastaz; ağız tabanı; ağız neoplazmları; boyun diseksiyonu; neoplazm rekürensi, lokal; parotis neoplazmları; radyoterapi, adjuvan; cerrahi flepler.

Currently, management of head and neck cancers benefits much from continuously developing oncologic and reconstructive techniques. The introduction of new techniques of radical surgery enabling wide resection of primary tumors of the upper aerodigestive tract, and dissection of the cervical lymph nodes, with the additional advantage of optional radiation therapy, resulted in improved local-regional control of the head and neck cancers. Probably the single and the most important factor in determining survival is the presence of distant nodal metastasis.[1] For squamous cell carcinoma (SCC) of the upper aerodigestive tract, the most common site of metastasis is the regional cervical lymph nodes. The lungs, liver, and the bones are the most common sites of distant hematogenous metastasis.

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Among the regional myocutaneous flaps, the pectoralis major proved to be the most appropriate and versatile material for head and neck reconstruction.[2] Thanks to its reliability, versatility, and ease of harvesting, it rapidly replaced most of the pre-existing reconstructive techniques. However, the disturbance imposed on the lymphatic system in the upper airway and on the cervical region resulting from primary resection/reconstruction and radiotherapy may result in unexpected patterns of lymphatic metastasis.[3]

Metastasis of the SCC of the upper airway tract to infraclavicular (distant) lymph nodes has been reported very infrequently in the literature.[3,4] This paper presents a retrospective case study of three patients with unusual patterns of metastasis to infraclavicular lymphatic nodes and illustrates a possible relationship with the use of the pectoralis major myocutaneous flap.

CASE REPORTS

Case 1– A fifty-four-year-old male patient underwent total laryngectomy and left radical neck dissection for T3N1 left transglottic, well-differentiated SCC of the larynx. He then received radiotherapy of 6100 rads over five weeks.

Eight months after the first procedure in April 1996, a firm mass, 3x2 cm in size, appeared over the anterior midline neck region. Examination of the biopsy specimen yielded a positive result for SCC. A composite resection of the recurrent tumoral lesion was performed along with partial pharyngectomy and the pharyngeal defect was reconstructed using a pectoralis major myocutaneous flap, tunnelled subcutaneously from the left chest wall.

During the following 10 months, signs of widespread pharyngeal mucosal recurrence were noted, invading the myocutaneous flap directly, and a subcutaneous swelling appeared on the left side of the chest beneath the incision line over the flap pedicle. Biopsy results of the pharyngeal mucosal lesion showed SCC of a similar pattern as the original tumor and the subcutaneous chest wall lesion was diagnosed as a distant lymphatic metastasis from SCC. After three months, the patient died from several episodes of bleeding from the sinus to the chest wall and recurrent local disease.

Case 2– A fifty-eight-year-old woman was referred to our clinic in December 1997 for SCC arising from the parotid gland, with skin invasion. The patient underwent radical parotidectomy, right radical neck dissection, excision of the skin, and reconstruction with the pectoralis major myocutaneous flap. Histopathologic examination confirmed SCC originating from the gland parenchyma. She received radiotherapy (6400 rads for five weeks). Ten months later, local recurrence was detected in the parapharyngeal space invading the flap (Fig. 1), together with a painless swelling in the ipsilateral axilla. Biopsy obtained from the local recurrence site and the axilla enabled a histopathologic diagnosis of SCC and lymph node metastasis, respectively. Attempts to find a second primary malignancy failed. The patient refused further treatment and died six months after the second recurrence.

Case 3– A forty-six-year-old male patient with a lesion on the left anterior floor of the mouth underwent resection at the lesion site and partial glossectomy, marginal mandibulectomy, left radical and right supraomohyoid neck dissections, and reconstruction with left pectoralis major myocutaneous flap in December 1999. Histopathologic diagnosis was SCC of the floor of the mouth (T3N1). The margins were tumor-free. The specimen obtained from the left neck showed lymphatic metastasis with extracapsular growth. He received radiotherapy (6000 rads for five weeks). Fifteen months later, the lesion recurred both at the primary site and in the upper neck. A multidisciplinary decision was given to try chemotherapy. The patient refused further treatment. Six months after the recurrence, he presented with a painless swelling in the left axilla,

Fig. 1 - *Computed tomography scan showing recurrent tumoral lesion invading the pectoralis myocutaneous flap.*

measuring 2x2 cm. He refused excision of the lesion so only fine-needle aspiration biopsy was performed, after which a SCC metastasis was confirmed. The patient died of multifocal recurrent disease ten months after the tumor recurrence.

DISCUSSION

In our institution, the current mainstays of treatment of advanced SCC of the head and neck are surgery and postoperative radiotherapy. Current attempts to improve prognosis and local-regional control include addition of chemotherapy. The use of combination regimens is becoming increasingly common, although significant survival benefits have yet to be shown.[5] For most cancers that arise in the head and neck region, a predictable mode of lymphatic metastasis has been well-documented based on tumor histology and the site of origin. However, prior surgery and radiotherapy may significantly alter this predictable pattern of lymphatic spread.[6] A neck dissection removes lymph nodes and results in disruption in the lymphatic channels of the cervical region. Radiotherapy, on the other hand, may cause both sclerosis of the lymph nodes and fibrosis of the lymphatic vessels, resulting in obstructive lymphedema. All these alterations may give rise to the development of collateral channels through alternative pathways. Alavi et al.[3] found metastasis to infraclavicular lymph nodes in 1.5% of cases with SCC of the head and neck. Of five patients they reported, four underwent aggressive resection and flap reconstruction, and the appearance of distant lymphatic metastasis ranged from three to 23 months after the diagnosis of upper aerodigestive tract recurrences or second primaries.

Reconstruction with a pedicled pectoralis major myocutaneous flap is well-established after resection of advanced head and neck tumors. The pectoralis major flap is a reliable means of regional transfer of skin, muscle, and subcutaneous tissues. Complications or demerits pertinent to its use have been limited.[1,7,8,9] Although not frequently pointed out in the literature, the use of regional flaps may well be regarded as a bridge of an expansion of the operative field to undiseased sites.

Robbins and Woodson[4] reported two cases of chest wall metastasis as a complication associated with the use of the pectoralis major myocutaneous flap. The authors hypothesized that this occurred due to tumor seeding at the time of surgery. However, the likelihood of direct contamination during the operative procedure may not be the only case under operating room circumstances where the wound is thoroughly irrigated and the instruments, gloves, and all related equipment are changed after tumour resection and prior to reconstruction.

Issing et al.[10] and Badellino et al.[11] reported two cases with chest wall metastasis and axillary metastasis, respectively, which they ascribed to the use of the pectoralis major myocutaneous flap transfer. Both patients had undergone composite resection for an oropharyngeal tumor following irradiation. Both developed recurrent disease adjacent to the intraoral portion of the flap. The authors addressed the lymphagenous spread of the recurrent disease along the pedicle of the flap. Hosal at al.[12] used lymphoscintigraphy in five head and neck cancer patients who underwent reconstruction with the pectoralis major myocutaneous flap, and showed that the newly formed lymphatics did not pierce the fibrotic border of the donor and recipient sides. The authors proposed that lymphatic metastasis associated with the use of the myocutaneous flap may occur in the infraclavicular lymph nodes only after recurrent tumours have invaded the flap directly.

In our case, all patients underwent extensive surgery; external irradiation was delivered to the primary tumor and regional lymphatics at the time of initial treatment, and the defects were reconstructed by the pectoralis major myocutaneous flap. Moreover, cervical lymphatics were obliterated. Therefore, a new collateral pathway might have been established from the flap to the infraclavicular lymph nodes.

The optimal management of this type of distant lymphatic metastasis remains poorly defined because of insufficient number of patients reported in the literature. Although long-term survival after axillary lymph node dissections has been reported for metastatic SCC of the larynx,[3,6] in general, distant lymphatic metastasis coincide with the development of the primary relapse. Two of our patients refused further treatment and died after the detection of distant lymphatic metastasis within ten months of their follow-up.

In conclusion, oncological evaluation of all patients presenting with a recurrent or second primary tumor after resection of head and neck cancer and reconstruction with a pedicled flap should

include the high possibility of metastasis to the infraclavicular lymph nodes.

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