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Epiglottic Fibrosis as a Late Complication of Radiotherapy for Nasopharyngeal Carcinoma

Nazofarenks Karsinomu Sebebiyle Uygulanan Radyoterapinin Geç Komplikasyonu: Epiglot Fibrozis

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Abstract / Özet

Radiotherapy is a widely used treatment for most head and neck neoplasms either as an adjuvant or primary therapy. However, it has many complications that can be classified as early or late. Late complications may manifest many years, sometimes decades, after the completion of radiotherapy. The addition of chemotherapy to the radiotherapy contributes to the development of more severe complications. We present a case of severe dyspnea and dysphagia 26 years after treatment of nasopharyngeal carcinoma with radiotherapy and chemotherapy.

Key Words: Radiotherapy, nasopharyngeal carcinoma, dysphagia, dyspnea, late complication

Radyoterapi birçok baş ve boyun kanserlerinde yaygın olarak primer veya adjuvan tedavi olarak kullanılablen tedavi seçeneğidir. Buna rağmen erken ve geç olarak sınıflandırılan komplikasyonlara sahiptir. Geç komplikasyonlar radyoterapi tamamlandıktan uzun yıllar sonra ortaya çıkabilir. Kemoterapiye eklenen radyotepi daha ciddi komplikasyonlara yol açar. Biz ciddi dispne ve disfaji ile kliniğimize başvuran, 26 sene önce nazofarenks ca sebebiyle radyoterapi ve kemoterapi almış vakayı sunduk.

Anahtar Kelimeler: Radyoterapi, nazofarenks karsinomu, disfaji, dispne, geç komplikasyon

Introduction

Radiotherapy has an established place in the treatment of head and neck carcinomas and is considered as the principal first line treatment against nasopharyngeal carcinoma, especially in combination with chemotherapy (1). However, it is also associated with complications, some of which are serious enough to impair quality of life.

Epiglottic fibrosis occurs rarely and it is infrequently reported, either as a complication of radiotherapy or as a result of another cause. The epiglottis loses functionality and patients may present with dyspnea, dysphagia and hoarseness. The extent of epiglottic fixation and enlargement determines the severity of symptoms.

Infectious, tumoral, traumatic and congenital causes of epiglottic fibrosis may lead to epiglottic dysfunction. Radiotherapy, bleeding, sarcoidosis and angioneurotic edema are among the rare causes (2).

We report an interesting case of epiglottic fibrosis in a patient who had recieved radiotherapy and chemotherapy 26 years ago.

Case Report

A 52 year old female patient was admitted to our hospital with the complaints of progressive dyspnea and dysphagia for 3 years. The patient had inspiratory stridor and dysphagia was especially marked for solids. Laryngeal endoscopy revealed fixation of the epiglottis at the aryepiglottic folds bilaterally, which was almost completely obscuring the rima glottidis. (Figure 1). The mobility of the vocal folds was in the normal range. The past medical history was remarkable in that the patient had recieved radiotherapy followed by chemotherapy in 1985 for a diagnosis of nasopharyngeal carcinoma. Medical records indicate that the patient had histopathologically confirmed nasopharyngeal carcinoma type 3 (undifferentiated carcinoma) that had extended to the nasal cavity. The patient also had a left-sided neck metastasis measuring 4 cm in diameter and located at level 2. After a course of radiotherapy of 50 Gray, chemotherapy consisting of cisplatin and bleomycin was given. Thereafter, the patient was followed up on a routine basis with no evidence of persistance and/or recurrence. During the follow-up period, nasopharyngeal biopsy had been re-performed once again due to a suspicious mass, and subsequent histopathological examination had demonstrated no evidence of recurrence.

The patient had started to experience dyspnea on exertion and mild degree dysphagia 3 years previously but she had been admitted for these symptoms 2 years previously. Partial fixation of

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the epiglottis was established at that time and, since the airway lumen was adequate, no intervention was proposed. The severity of symptoms had progressively increased, and when the patient was examined recently, the rima glottidis was almost completely obscured by the epiglottis. Dyspnea was evident even at rest. Nasopharyngeal endoscopy was nonspecific, with no evidence of recurrence of nasopharyngeal carcinoma. Computed tomography (CT) of the larynx revealed posterior displacement of the epiglottis over the vocal cords (Figures 2, 3). Tracheostomy was performed and, under general anesthesia, the epiglottis was resected with the help of a diode laser. The epiglottis was found to be completely fixed to the aryepiglottic folds bilaterally. The patient was decannulated on postoperative day 3 with no dyspnea. Dysphagia also improved dramatically, with no aspiration. Histologically, dense fibrosis of the pericondrium and periepiglottic soft tissue and mild inflammatory changes were noted. Minor changes were found in the elastic cartilage (Figure 4).

Figure 1. Endoscopic examination of the patient

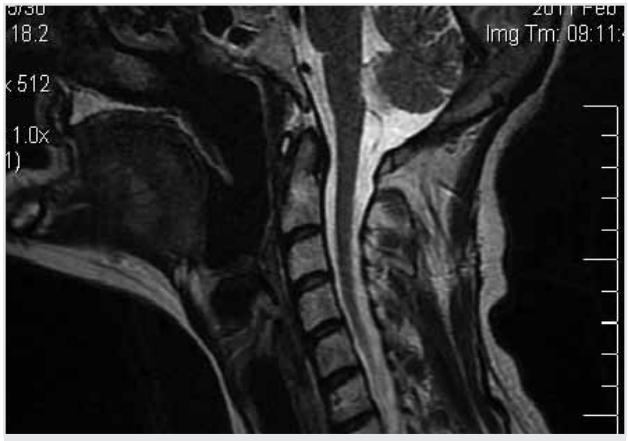

Figure 2. Preoperative BT view (coronal section)

Figure 3. Preoperative BT view (sagittal section)

Discussion

Radiotherapy is the primary treatment option for nasopharyngeal carcinoma (3). Although survival rates following radiotherapy are high, longer survival leads to the appearance of complications. Actually, the complications of radiotherapy are classified as early or late, depending on the time of their appearance. Early complications generally subside several weeks after completion of the treatment, whereas late complications are more important because they are generally permanent. Neuroendocrine dysfunction, visual/orbital problems, dental abnormalities, cartilage and/or bone necrosis and hypothyroidism are regarded as late complications. However, most notable among the late complications are radiation-induced tumors of the head and neck. Fibosis of the soft tissues, another late complication, is sometimes so severe that breathing and swallowing functions deteriorate.

The combination of radiotherapy and chemotherapy (platinum-based) has shown an increase in both local and regional control for nasopharyngeal carcinoma (4). Currently, combined therapy regimens are considered to be as the standard treatment for nasopharyngeal carcinoma (5). Late toxicity from combination treatment may take months to years to develop in survivors and long-term follow up is required to address these complications (5). As the treatment protocols become more effective, the occurrence of late complications will increase (5, 6). Swallowing dysfunction may appear as a late toxicity following irradiation of the head and neck. It may be severe enough to result in stenosis of the esophagus and dependence on gastrostomy (5). The incidence of percutaneous endoscopic gastrostomy was reported in 10% of surviving patients at the third year by Citrin et al. (5) Severe dysphagia reduces the quality of life and causes the physical condition of patients to deteriorate. A radiation dose of as low as 12 Gray is known to cause histological changes in soft tissues (7). Different types of radiation treatments, such as intensity modulated radiotherapy, may reduce the severity of dysphagia (6).

Increased acute inflammation following radiotherapy may increase late-effect fibrosis, resulting in more severe late compli-

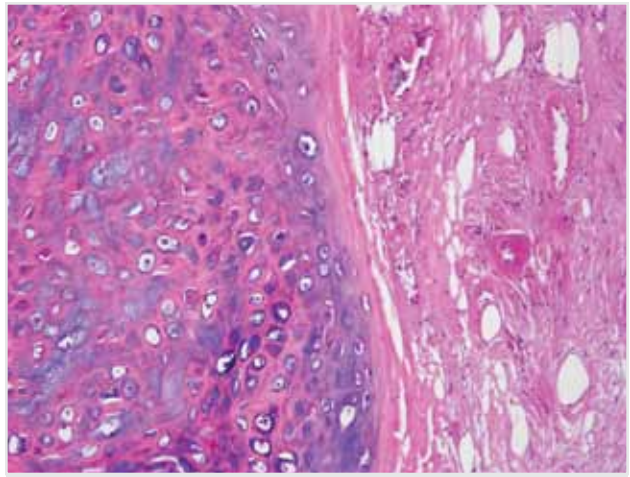

Figure 4. Note the dense fibrosis of the perichondrium and the surrounding soft tissue. There are minimal degenerative changes to the elastic cartilage (HEx40)

cations. Healing of the acute inflammation by fibrosis involves replacement of the normal cells by connective tissue cells. The protracted acute reaction was postulated to cause healing by fibrosis (8). In fact, radiotherapy may result in dysphagia both as an early and late complication. Mucosal damage due to the production of reactive oxygen species and the resulting mucositis and edema of the soft tissues with associated pain, thickened mucous production and xerostomia, underlie the pathophysiology of acute dysphagia and dyspnea (8). These early effects dissipate to a large extent a few months after the cessation of radiotherapy. However, an ongoing cytokine activation may persist and the tissues can become fibrotic and rigid with functional impairment (8). Chronic ischemia and oxidative stress are suspected to be responsible for tissue damage long after the end of treatment (9). The addition of chemotherapy clearly increases the incidence of these complications (10).

Late complications of radiotherapy to the head and neck are reported relatively infrequently in the literature. Some of these complications include dysphagia and dyspnea due to pharyngoesophageal fibrosis, vocal cord immobility, pseudoaneurysm of the carotid artery and choanal atresia (1, 11-15).

Conclusion

Vocal cord immobility and chondronecrosis of the larynx were reported previously as late complications of radiotherapy (1, 7, 12). We report a case of fibrosis and fixation of the epiglottis severe enough to cause both dyspnea and dysphagia many years following radiotherapy.

Conflict of Interest
No conflict of interest was declared by the authors.

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