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Case Report

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Squamous Cell Carcinoma Development Secondary to Chronic Osteomyelitis: A Case Report

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ABSTRACT

Squmaous cell carcinoma is a very rare clinical condition encountered as a complication of chronic osteomyelitis. Chronic osteomyelitis is a serious complication of fractures or crush injuries that has to be treated appropriately. Similarly, squamous cell carcinoma is considered as the last complication that has been considered by most of the orthopaedists. In this case report, it was aimed to highlight the importance of correct diagnosis and treatment of both chronic osteomyelitis an done of its complication squamous cell carcinoma.

Key words: *Squamous cell carcinoma, Chronic osteomyelit, İlizarow, Rotational falp*

ÖZET

Kronik Osteomiyelite Sekonder Gelişen Skuamöz Hücreli Karsinom: Olgu Sunumu

Skuamöz hücreli karsinom kronik osteomiyelitin komplikasyonlarının çok nadir bir klinik halidir. Kronik osteomiyelit is kırıkların ve ezilme yaralanmalrının ciddi bir komlikasyonudur ve ciddi bir şekilde tedavi edilmelidir. Ayrıca ortopedistlerin aklında skuamöz hücreli karsinom genellikle en son komplikasyondur. Bu vaka sunumunda kronik osteomiyelitin ve onun bir komplikasyonu olan skuamöz hücreli karsinomun doğru tanı ve tedavisinin önemini vurgulamak amaçlanmıştır.

Anahtar Sözcükler: *Skuamöz hücreli karsinom, Kronik osteomyelit, İlizarow, Rotational flap*

Squamous cell carcinoma (SCC) is a rare but well-documented complication of chronic osteomyelitis (1). Squamous cell carcinoma is reported in chronic osteomyelitis of sinus cases (2). A case that had penetrating injuries of the extremities in Vietnam had been presented. The patient had frequent complication of chronic osteomyelitis and eventually developed the rare complication, squamous cell carcinoma (3). Squamous cell carcinoma is a complication of chronic tibial osteomyelitis which can be treated with limb-preserving surgery or amputation (4).

This case report presents a patient with refracture due to trauma while he was playing football. During evaluation squamous cell carcinoma was diagnosed as an outcome of previously untreated chronic osteomyelitis.

CASE REPORT

A 43 years-old male with chronic osteomyelitis who had fractured his right tibia at age of 14 was admitted. The patient had been diagnosed as chronic osteomyelitis after three years. His had right tibial fracture at 40 years-old again while playing football. He was diagnosed to have squamous cell carcinoma at age 43. On admission of the patient, a very thick right tibia and tibial refracture were found (Figure 1a-1b). There were no other injuries nor any gross pathology on inspection. He had normal general medical condition. A detailed physical examination revealed a 107x52 mm mass lesion on anterior part of the leg (Figure 2-3). Initially, a wide debridement and external fixator were performed (Figure 3). Patient was treated by surgical Ilizarow wire technique and rotational full-thickness flap (Figure 4-5-6). There was no problem with flap at the second year follow up. Tibial union was three-cortical; but was not sufficient. At third year follow-up, the patient admitted with recurrence of the squamous cell carcinoma in an aggressive manner on anterior part of the leg despite receiving oncological treatment. Disarticulation was performed to right extremity below knee after extensive discussion of multidisciplines.

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Figure 1. *Preoperative tibia lateral radiography (thickened bone due to osteomyelitis) (a), Preoperative tibia antero-posterior radiography (b).*

Figure 2. *Clinical appearing of squamous cell ca after chronic osteomyelitis*

Figure 3. *External fixator (acute treatment with debridement and fixing)*

Figure 4. *Excised part of tibia (histopathological examination revealed invasive squamous cell carcinoma)*

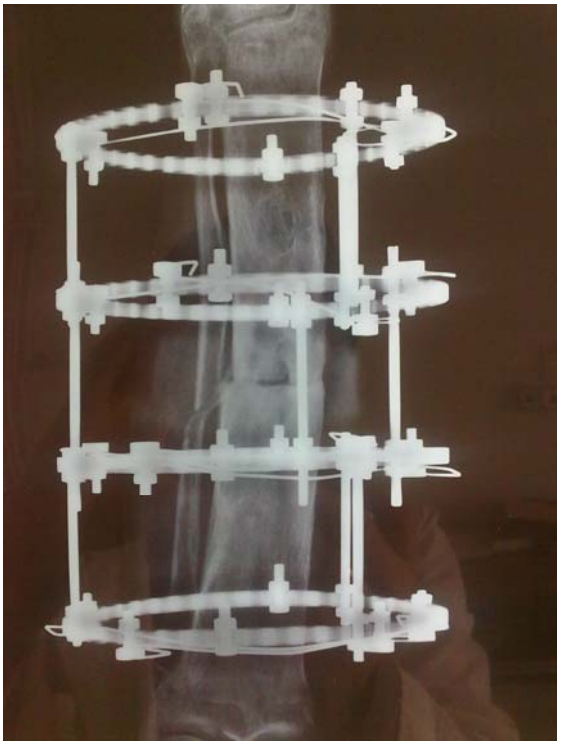

Figure 5. *Ilizarov technique for tibial fracture treatment*

Figure 6. *Ilizarov method with rotational full-thickness flap*

DISCUSSION

The formation of epidermoid carcinoma on fistula of osteomyelitis has been known since the 19th century. The frequency of this late complication cannot be determined precisely, but it has been estimated about 0.5/100 of fistulous osteomyelitis. Signs are often not specific and that causes delayed diagnosis. Signs are unusual pain, ulceration, granulation and discharge. The diagnosis depends on histology and requires a deep and wide surgical biopsy involving the entire sinus tract, but uncertainties sometimes persist concerning atypical pseudoepitheliomatous hyperplasia. The best treatment is amputation with removal and biopsy of regional lymph nodes when present, but it does not always prevent the formation of metastases which are seen in 20 out of 100 cases, usually during the first three years following the diagnosis (5-6). Thus, several authors emphasized the importance of these cases and suggest squamous cell carcinoma risk as an unusual complication that should be considered in all patients showing atypical changes in an old fistulous osteomyelitis (5-6).

Malignant changes following chronic osteomyelitis with draining sinuses are rare (0.38-2.7%). The duration from onset of osteomyelitis to the development of malignant varies, however, it requires an average time of approximately 30 years. Most patients are males between 50 and 60 years of age. If there is any doubt about malignancy (bleeding, tumor growth) biopsy should be performed and repeated if histological findings reveal uncertain results. Metastases should be excluded by x-ray of the chest, scintigraphy and computerized tomography of the regional lymph nodes. Appropriate surgical treatment can only be done by amputation or disarticulation of the extremity. Patients who were operated because of squamous cell carcinoma of chronic osteomyelitis sinus ought to be controlled in a regular follow-up including blood tests (tumor markers) (7). These tumors are usually managed by amputation alone. Some authors believe that in patients with histologically undifferentiated and invasive tumors, aggressive treatment should be carried out by way of amputation, excision of regional lymph nodes and a short course of chemotherapy/radiotherapy (2).

Limb-sparing surgery is another treatment option for this disease (8). Some authors believe that local wide excision and staged microvascular reconstruction is an excellent alternative treatment for malignancy (4), whereas some believe that excision and application of ilizarov with bone graft is another (4, 8).

Chronic osteomyelitis after fractures are difficult to treat. They often require both medical and surgical treatment. In some of these cases, chronic sinuses form which possesses a high risk of having epidermoid carcinoma due to chronic irritation.

Chronic osteomyelitis is a medical condition which must be followed up carefully because of high risk of malignancy. All fistulae should especially be treated medically and surgically and they also must be followed up in routine clinical examinations. This case report was presented since it's a rare case and highlights the importance of development of squamous cell carcinoma after chronic osteomyelitis.

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