

Case Report

Enchondroma in the distal phalanx of the thumb with infection resulting in clubbing felon

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Abstract: Background: Enchondroma in the distal phalanx was very rare. It was difficult to be diagnosed for lack of typical clinical symptoms. Case presentation: We present a case of clubbing felon in an adult patient diagnosed with enchondroma and infection in the distal phalanx of thumb. Local doctor diagnosed it as a “felon” associated with paronychia and who ignored the devastating tumor. Preoperative x-Ray indicated the typical expansile lytic lesion with thinning bone cortex. bone necrosis was present during operation. Pathological diagnosis was enchondroma. The effective treatment of infection, sufficient drainage and application of artificial bone grafting made it easy to achieve a good postoperative result. Two years after surgery, there was no tumor recurrence. Conclusions: Enchondroma in the distal phalanx that may present a “clubbing felon”. Timely recognition and appropriate treatment can gain a good result.

Keywords: Clubbing, distal phalanx, enchondroma, felon

Introduction

Enchondroma was a common benign tumor of the hand. The most frequent sites were in the following: proximal phalanx, middle phalanx and the metacarpals [1]. Enchondroma in the distal phalanx was very rare, especially in the area of thumb, it was more uncommon [2, 3]. Besides, it was often difficult to be diagnosed, owing to the lack of special clinical symptoms and confused with other diseases. In this article, we present a case of clubbing felon in an adult patient with an enchondroma accompanied with infection in the distal phalanx of thumb.

Case presentation

In October, 2013, a 50-year-old right-handed female was admitted to our hospital with the complaint of persistent pain and gradually increase in her right thumb for four months. History of trauma and pulmonary diseases was denied. The distal phalanx of the thumb was

swelling and looked like “clubbed finger”, other fingers were normal. Physical examination showed significant swelling, tenderness, redness and subcutaneous skin abscess on the eponychium of thumb (**Figure 1**). Because of swelling, she lost flexion function of the distal interphalangeal joint. Local outpatient doctor diagnosed it as “felon” associated with paronychia. Surgical incision and debridement were not performed. She was given intravenous antibiotics Cefuroxime for 7 days and took oral Cefuroxime tablets for 3 weeks before coming to our hospital.

The blood routine examination items blood biochemical analysis and tumor markers were within normal range. Only blood routine test showed the White blood cell count was elevated, which explained her long duration of infection. The C-reactive protein 45.30 mg/dL (normal, 0-8) and erythrocyte sedimentation rate (ESR) 19 mm/hour (normal, 0-15) were elevated. Plain radiographs revealed cortex thinning, bony defect, and soft tissue swelling in the dis-

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Figure 1. The thumb presented as clubbed finger, marked erythematous swelling and pus on the eponychium could be seen.

tal phalanx of the thumb (**Figure 2A**). The preoperative CT reconstruction showed the large bony defect in the dorsal part of the distal phalanx (**Figure 3**). Biopsy of the subungual tissue revealed inflammatory cellular infiltration. The deep tissue biopsy procedure wasn't taken for the avoidance of needle-path contamination. Oral antibiotic (Linezolid Tablets, 600 mg, bid, for one weeks) was used until all laboratory data were within normal limits preoperatively. Under digital block anesthesia, a dorsal incision was made in the distal phalanx of the thumb. From the incision, we could find phalanx cortex thinning and chronic abscess formation. A window was opened in the thinned cortex, followed by curettage and highspeed burring of the cavity. The phalanx cortex was retained carefully. Adequate drainage of the abscess area was also simultaneously achieved. After radical debridement, the cavity of bone defect was filled with calcium phosphate cement (Wright, USA) concerned about stable fixation and the initiation of early range-of-motion exercises [4]. The lesions were sent for pathological examination postoperatively. In general observation, the lesions seemed as the complex of degenerative tissue, residual tumor tissue, and inflammatory granulation tissue (**Figure 4**). Histologic findings combined with imaging examination and clinical symptoms revealed benign cartilaginous patterns of enchondroma in the distal thumb phalanx (**Figure 5**). Three days after the surgery, the patient was allowed

to perform full motion of the thumb. Three months after the surgery, bone regeneration was noted radiographically, and the patient could do full weight exercises. Clinical and radiological follow-up were performed for two years, no evidence of recurrence was noted after surgery (**Figure 2B, 2C**).

Written informed consent was obtained from the patient for publication of this case report and any accompanying images. Ethical approval was given by the medical ethics committee of the First Affiliated Hospital, College of Medicine, Zhejiang University.

Discussion

Clubbed finger is part of the syndrome of hypertrophic osteoarthropathy, endocrine, pulmonary, neoplastic and multisystem diseases [5], it's hardly connected with enchondroma. Felon was deep infection of the fingertip pulp, which evolved from untreated paronychia [6]. The occurrence of clubbed finger and felon at the same time hasn't been seen in the literature by now.

In this case, because of the exophytic growth of the tumor, cortical bone defect lead to local subcutaneous infiltration, accompanied soft tissue infection increased the enlargement of soft tissue in the fingertip, which finally lead to clubbing of the thumb. At the same time, soft tissue chronic infection brought about the deep infection of the fingertip pulp, which gave rise to felon. Preoperative typical expansile lytic lesion with cortical thinning and intra-operative bone defect were helpful to the diagnosis of enchondroma. The possibility of a malignancy was be excluded by pathologically [7]. Local doctor did not obtain the x-ray and diagnosed it as "felon" with associated paronychia, who ignored the underlying tumor. Besides, it may lead to misdiagnosis and delayed surgery if the patient went to department of pulmonary diseases instead of hand surgery. This specific case was finally diagnosed as "clubbing felon in thumb", which has never been reported before in the literature.

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Figure 2. A. Plain radiographs revealed cortex thinning, bony defect, and soft tissue swelling in the distal phalanx of the thumb before surgery. B. Bone grafting in the distal phalanx of the thumb three months after surgery. C. Bone regeneration was noted radiographically with no evidence of recurrence after two years.



Figure 3. The preoperative CT reconstruction showed the large bony defect on the dorsal part of the distal phalanx.

The surgical incision for enchondroma in the distal thumb can be palmar, dorsal, lateral or fish mouth. Dorsal incision over the distal phalanx may cause iatrogenic nail bed damage [8]. Every incision has its own advantages and disadvantages. According to the result of preoper-



Figure 4. Degeneration and necrosis, residual tumor tissue, and inflammatory granulation were found intraoperatively.

ative three-dimensional CT reconstruction, we prefer to take the cortex defect side as the surgical approach, since it is convenient for curettage with bone grafting. Curettage with calcium phosphate cement was carried out in consideration of reconstruction of bone defects caused by tumors. Though local infection increased the possibility of bone resorption, the combined surgery allowed early mobilization, and to minimize the joint stiffness [9]. For this purpose, antibiotic therapy was used preoperatively and postoperatively, though debridement was carried out during the operation. No apparent bone resorption and no recurrence of enchondroma were found in postoperative follow-up.

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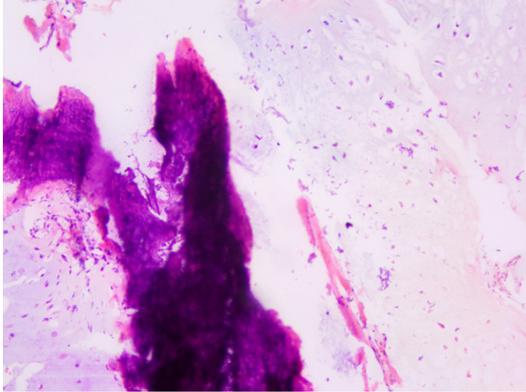


Figure 5. The tumor consists of lobulated hyaline cartilage. The cells are round or ovoid. There is vacuolization in the cytoplasm. The nucleus is located in the center and stained darkly. The cells have a pale blue, uniform cartilage matrix with calcification. A small amount of cartilage cells are spindle and polygonal, visible mucin-like matrix (10×10, HE).

Conclusion

In summary, we have reported a unique case of enchondroma in the distal phalanx of the thumb with infection, which presented as a “clubbing felon”. Total control of infection combined with individualized surgery contributed to good postoperative result. Although rare, enchondroma should be considered in the differential diagnosis of clubbing and felon in a single digit.

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Disclosure of conflict of interest

None.

Abbreviation

ESR, erythrocyte sedimentation rate.

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