Diagnostic Value of High Frequency Ultrasound on Pilomatricoma

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Abstract: To analyze the characteristics of high-frequency ultrasonography of pilomatricoma and discuss the value of high-frequency ultrasonography in the diagnosis of pilomatricoma, ultrasonographic data of 71 cases (77 patients) with pilomatricoma diagnosed by high-frequency ultrasonography and pathology in our hospital from June 2013 to June 2017 were retrospectively analyzed. The location, size, shape, border, echo and blood supply status of the sonographic images were summarized. As a Result, among the 71 patients (77), there were 62 cases located at the head and neck, 11 at limbs and 4 at the trunk. 66 cases were single and 5 cases were multiple. All the tumors were subcutaneously located. The typical characteristics of pilomatricoma: it is more common in young people. They are hypoechoic nodules on hypodermatic parts of head and neck. The boundary is clear. The shape is regular, accompanied by calcification within the visible dot-like blood flow signal. There is inner calcification within the visible dot-like blood flow signal. It is concluded that pilomatricoma has certain sonographic features. High-frequency ultrasonography has a significant impact in the diagnosis.

Keywords: Pilomatricoma, High-Frequency Ultrasound, Diagnostic Value

1. Introduction

Pilomatricoma, also known as calcifying epithelioma, is a benign tumor that is presented at the junction between the deep dermis and the subcutaneous fat. It originates from hair follicle stromal cells and rarely has malignant transformation [1] Hair mother tumor is common in young people. The history of the disease is usually long, often occurring in the head and neck. It is usually solitary, sometimes multiple. Because pilomatricoma has low incidence, clinical and imaging manifestations are diverse, clinical reports and imaging reports are scarce, and doctors' knowledge of them is different. All factors make clinical and imaging diagnosis uneven. Depending on the literature reports, the diagnostic coincidence rate is about 0 ~ 95.2% [2]. It is often misdiagnosed as subcutaneous calcium salt deposit, epidermoid cyst, calcified lymph node, hemangioma and so on, and the misdiagnosis rate is high [3]. Compared with CT and MRI, high-frequency ultrasound is convenient, fast and noninvasive for the diagnosis of pilomatricoma in the superficial area, with less cost and higher image resolution. It is a recommendable auxiliary diagnostic means. The main purpose of this study is to retrospectively analyze the high-frequency ultrasonographic data of 71 cases (77) of pilomatricoma in our hospital confirmed by ultrasonography and pathology, and summarize the characteristics of ultrasound images, so as to deepen people's understanding in the ultrasound image of pilomatricoma and improve the diagnosis rate.

2. Data and Methods

2.1. General Data Collected

From June 2013 to June 2017 in our hospital, 71 cases (77 cases) were diagnosed by high frequency ultrasonography and confirmed as pilomatricoma by pathology after operation, including 31 males and 40 females, with a male to female ratio of 1:1.3. The age of the patient was 1–68 years old, with an average age of 27 years, of which 45 were less than 20 years of age, 16 were 20–40 years old, and 10 more than 60 years old.

2.2. Ultrasonic Instruments and Inspection Methods

Philips iU22 ultrasound diagnostic apparatus, the frequency
of 12 ~ 5MHz. Making patients hold a comfortable posture, fully exposed to the lesion, then selected suitable ultrasound examination conditions, and scanned the mass in multiple directions after coating with a coupling agent. The location of the mass, the size of the tumor, the lump shape, the internal echo, the calcification, the liquefaction, the peripheral echo and the surrounding tissues were determined. Color Doppler ultrasound was used to observe the internal and peripheral blood flow.

3. Results

3.1. Parts and Numbers

62 cases occurred in the head and neck, accounting for 80.5% (including 19 in face, 17 in orbital, 11 in the neck, 9 in auricular, 6 in scalp), 11 in limbs, accounting for 14.3%, and 4 in trunk. Among them, 66 patients were single, 4 had two lesions, and 1 had three lesions.

3.2. Physical Examinations

The skin color of the lesion: 49 were normal skin color, 17 local skin was dark red, and 11 were blue purple. Palpation in most cases is characterized by a clear border, adhesion and non-detachability with skin layer, but the basal part can be pushed up. Most of them are hard (57, 74%), and the remaining texture is medium.

3.3. Ultrasound Sonographic Features

The tumors are located subcutaneously, that is, between the skin layer and the subcutaneous fat layer. Of the tumors, 69 (89.6%) were elliptical and 8 (10.4%) were irregular. 67 (87%) boundaries were clear, 6 (7.8%) of the boundary was not clear, and 4 (5.2%) was unable to define whether the boundary was clear because of serious rear attenuation. All cases were associated with different degrees of calcification on the basis of hypoechoic, of which 69 (89.6%) were spot-like and patchy calcifications, and 8 (10.4%) were coarse curved calcifications. 25 (32.5%) blood flow signals were visible inside the tumor (9 of which were rich in blood flow signals, 16 were a few punctate blood flow signals), and 52 (67.5%) tumors had no blood flow signals inside. Ultrasonographic images of typical cases were shown in Figure 1 and 2. The features of the sound image are given in Table 1.

3.4. Pathological Features

Generally, most of the tumors have complete capsules. The cut is gray or dark brown. It is shaped like bean dregs, tough to the touch. Under the microscope, the tumor capsule is a fibrous connective tissue membrane. The tumor is composed of basophilic cells, shadow cells and transitional cells located between the two. The stroma of the tumor is composed of fibrous connective tissue, with focal calcification and giant cell reaction of the foreign body. The shadow cells are the key
The pilomatricoma should be identified with an epidermoid cyst, hemangioma with vein stone, hemangioma with a thrombus, enlarged lymph node and hypodermic calcification. Epidermoid cysts usually have features of cystic change, such as rear echo enhancement, and no internal blood flow signals; hemangioma with phlebolith lesions will change in the probe after extrusion, and the blood flow signal will be more abundant; Lymph nodes are generally not single, if the lymph nodes with internal calcification are common in tuberculosis or tumor metastasis, the patient has a longer history. In addition, it is necessary to exclude the skin metastasis of malignant tumors. The diagnosis of pilomatricoma is based primarily on histopathological examination. Ultrasonographic features of hair follicle tumor are valuable for the diagnosis of pilomatricoma, but the rate of misdiagnosis is still pretty high [3].

5. Conclusion

This study retrospectively analyzed the ultrasonographic data of 4 patients with pilomatricoma in our hospital for 4 years and concluded that the sonography of Hirschsprung's tumor has certain characteristics. When the clinical manifestations of the body surface (especially the head and neck) can promote subcutaneous solitary hard nodules, high-frequency ultrasonography prompted regular shapes, clear border and that there is a rough calcification in the interior and a hypoechoic halo around it. At this time, the possibility of pilomatricoma should be highly suspected. It is suggested that high-frequency ultrasound is of great significance in the diagnosis of hair mother tumor. However, due to the small sample size, the sonographic characteristics of the gross masses are limited. We need to further expand the sample size and conduct a multicenter joint study.

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