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Metacarpal sign

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Abstract

Background

Archibald's sign, or metacarpal sign is defined as shortening of the IV and V metacarpal bones, is a rare phenomenon found in the Turner syndrome, homocystinuria and in Albright's osteodystrophy.

Objectives

The aim of the article was to show a rare case of metacarpal sign with atypical shortening of the III and IV metacarpal bones not connected with gonadal dysgenesia, genetic disorders nor osteodystrophy.

Material and methods

Case report of a 60-year-old female patient.

Results

Artchibald's metacarpal sign in the described case was accompanied by erosive arthritis in the left lower extremity. No features of genetic disorders nor gonadal disgenesia were found in the patient. Undifferentiated seronegative asymmetric erosive arthritis developed in the patient. The level of parathormon was within the normal range. No signs of tumor were seen in bone scintigraphy.

Conclusions

Archibald's metacarpal sign may be present in patients without genetic disorders.

Key words: metacarpal sign, metacarpal bones, undifferentiated arthritis

Introduction

Archibald's sign is shortening of metacarpal bones, which is most often found in Turner syndrome [1,2]. In 1959, Archibald and De Vito described a sign that depended on the relative lengths of the lateral three metacarpals. When a line is drawn tangentially to the circumference of the heads (distal ends) of the fourth and fifth metacarpals, the extension of this line normally passes distally to the head of the third metacarpal and does not intersect the third metacarpal (negative metacarpal finding). In some hands such a line is tangential also to the circumference of the head of the third metacarpal (borderline metacarpal finding). In others the line runs through the distal end of the third metacarpal (positive metacarpal finding) [2].

The aim of the article was to show a rare case of Archibald's sign not connected with gonadal dysgenesia.

Case report

A 60-year-old female patient was reported to the rheumatology outpatient clinic because of suspected arthritis. She reported swelling and pain in the left foot and left ankle for 6 months. She reported no morning stiffness. She has been treated for arterial hypertension with nebivolol 2.5mg/day, lacidipinum 4mg/day, rimaprilum 5mg/day, for hypercholesterolemia with atorvastatinum 20mg/day and for hypovitaminosis D with vitaminum D_3 2000IU/day.

The patient was postmenopausal. She gave birth twice and had two healthy daughters. She was 156 cm tall. On physical examination she had positive metacarpal sign and swollen left ankle. On X-ray bilateral shortening of III and IV metacarpal bones was found [Fig.1], bilateral rhizarthrosis pollicis and periarticular osteoporosis, but no abnormalities were seen in the length of the metatarsal bones; bilateral hallux valgus was present.

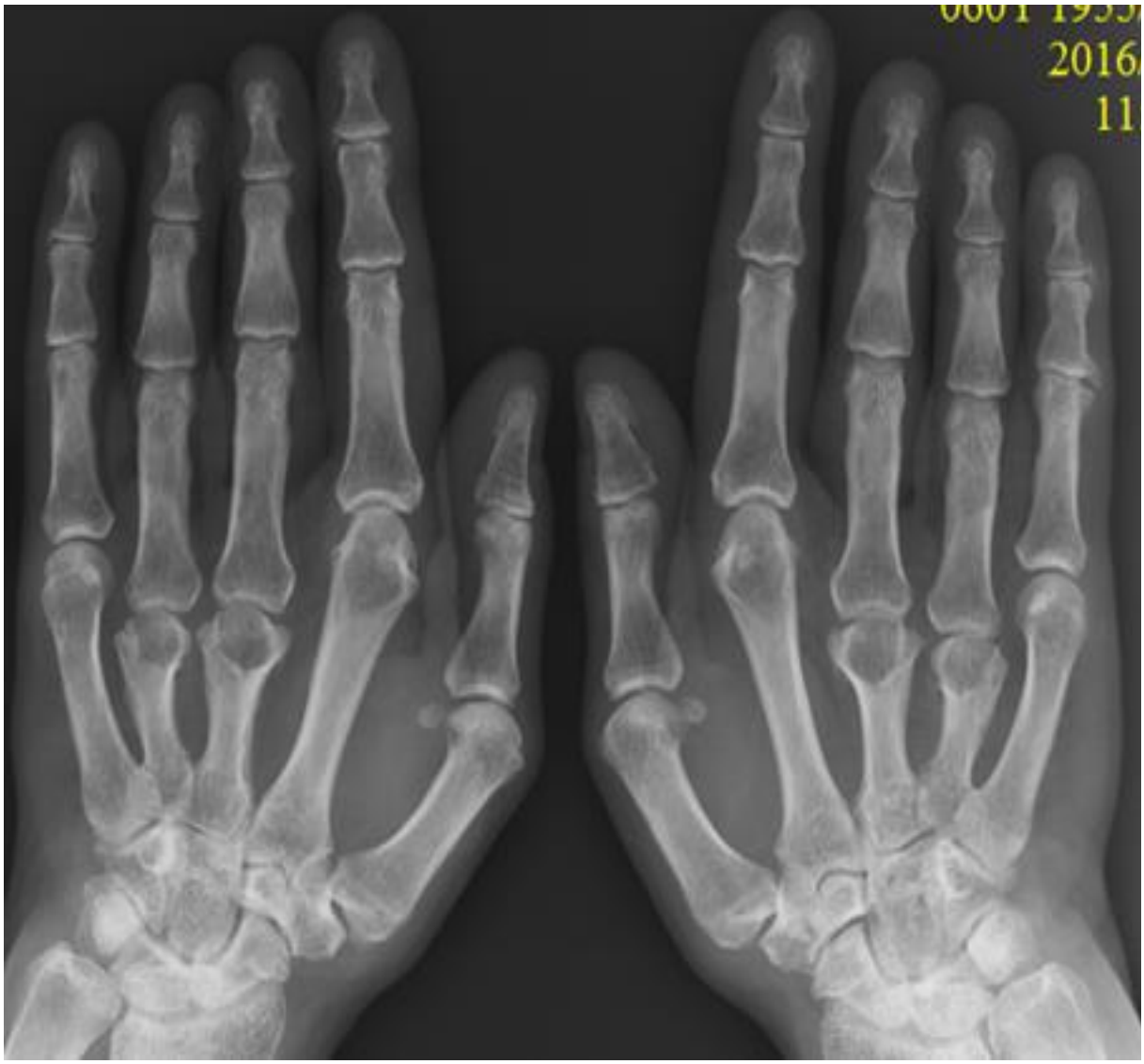

Fig. 1. X-ray bilateral shortening of III and IV metacarpal bones was found bilateral rhizarthrosis pollicis and periarticular osteoporosis, but no abnormalities were seen in the length of the metatarsal bones; bilateral hallux valgus was present.

In magnetic resonance an erosion in the left lateral ankle was detected. Rheumatoid factor (RF IgM) was negative, erythrocyte sedimentation rate (ESR) =11mm/h, C-reactive protein (CRP) = 2.1mg/l and parathormon were within the normal ranges, anti-cyclic citrullinated protein (aCCP) =1.1U/ml was negative, no evidence of neoplasm in bone scintigraphy was found. Blood morphology did not reveal any abnormalities: white blood cell count (WBC) =6400/µl, red blood cell count (RBC) = 4630000/µl, haemoglobin (Hgb) =14.1g/dl, platelet count (PLT) = 263000/µl. Biochemistry was normal: Na =145 mmol/l, K =4.4 mmol/l, Ca total =9mg/dl, creatinine =0.59mg/dl, uric acid =3.4mg/dl, glucose =88mg/dl, protein =7.1g/dl, alanine transaminase (ALT) =23U/l, asparagine transaminase (AST) =21U/l, thyroid stimulating hormone (TSH) =0.76uIU/ml, anti nuclear antibodies (ANA) 1:320, urine analysis was normal: specific gravity 1015, pH 8, protein negative, glucose negative, ketone bodies negative, urobilinogen 3.2µmol, nitrite negative, leukocytes negative, blood negative. Abdominal sonography revealed no pathologies, neither did the chest X-ray.
Undifferentiated seronegative arthritis was diagnosed and methylprednisolone (4mg/day) and meloxicam (15mg/day) were used for short-term treatment. At the control visit, the join pain and swelling, resolved and medication was discontinued except for vitamin D.

Discussion

Archibald's sign is found in Turner syndrome [1,2]. Turner syndrome is characterized with constellation of physical features of primary amenorrhea, short stature, short neck. Dimpling of the knuckles of the fists of both hands, along with short fourth and fifth metacarpals on an X ray of the hands, a positive Archibald's sign, may be seen in females with Turner's syndrome [1]. The presented patient gave birth twice and used to menstruate regularly as recorded in her medical history. Although mosaicism is possible in Turner syndrome, the patient had no features of chromosomal abnormality- missing chromosome X.

There is also data that Archibald's sign can be present in homocystinuria [3] and in Albright's osteodystrophy [4]. The patient had no history of kidney stones, her parathormon and total calcium were normal. She supplemented vitamin D, but in 54 - 49°N latitude, where she lived vitamin D_3 deficiency was common.

Conclusion

Archibald's metacarpal sign may be present in patients without genetic disorders.

Author declares no conflict of interest.

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