CASE REPORT

Case Report: Renal impairment and bilateral cataracts in a patient with Maffucci syndrome [version 1; peer review: awaiting peer review]

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Abstract
Maffucci syndrome is a sporadic, non-hereditary condition that characterizes the presence of multiple skeletal and vascular lesions. We present the case of a 37-year-old man who complained of multiple swellings on the hands, face and wrists affecting the quality of his life. Bilateral cataract and renal impairment were two other features identified in our patient. Renal impairment was likely due to renal vascular malformation, as all other causes of renal compromise were ruled out. Radiographic images showed multiple radiolucent areas in both hands. Multiple enchondromas with pathologic confirmation of skin lesions as cavernous haemangiomas confirmed the diagnosis of Maffucci syndrome in our patient. The patient was referred to the orthopaedic department for osteotomy. Currently, the patient is on dialysis and no other complications have been observed in follow-up visits. This is the first report of Maffucci syndrome which discusses renal involvement. Regular screening of renal functions in patients with Maffucci syndrome could prevent renal complications.

Keywords
Maffucci Syndrome, enchondromas, hemangiomas, renal impairment, bilateral cataract
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Introduction
Maffucci syndrome, also called Morbis Ollier, is a rare, nonhereditary, congenital condition characterized by a combination of multiple enchondromas with haemangiomas and less often lymphangiomas. Angelo Maffucci first described it in 1881 when he reported all the main characteristics of the syndrome in the autopsy of an elderly woman who died following an arm amputation. In 1940, Carleton et al. proposed the eponym Maffucci syndrome. There is no gender or racial predilection, but the syndrome usually becomes evident by puberty in 78% of patients. Multiple cases of this syndrome have been reported. The involvement of many organ systems, including the liver, spleen, adrenal cortex and nervous system, have been reported in Maffucci syndrome. Here, we describe a case of Maffucci syndrome, which along with the typical findings of enchondromas and haemangiomas, also presented with renal impairment and bilateral cataracts.

Case presentation
A 37-year-old male patient presented with complaints of multiple swellings on both hands that affected his quality of life. He noticed these swellings at the age of 15 and since then the swellings had increased in size. The progressive increase in the size of swellings interfered with the patient’s day to day life and made it difficult for him to perform routine tasks. The patient had not undergone any medical or surgical treatment for this syndrome since diagnosis. The patient had no history of melena, haematochezia or hematemesis. There was no history of diabetes, hypertension, or drug or alcohol use. Physical examination revealed multiple firm nontender swellings on both hands and a cystic swelling present on the face above the right eyelid. Ophthalmologic examination showed bilateral cataracts.

The patient also had a cystic rubbery, painless, non-tender mass present on the left wrist, which is suggestive of cystic lymphangioma (Figure 1).

We did not find any stippled calcification within the right humerus, femur, tibia and fibular head, right scapular and pelvic dyschondroplasias, and there was no phlebolith in the soft tissue.

Significant lab findings included urea of 200 mg/dl (normal range, 7–30 mg) and creatinine 1.9 mg/dl (normal range, 0.6–1.2 mg/dl), which might be due to renal vascular malformation, as the patient was young, and all other causes of renal failure were ruled out, which included diabetes (by assessing HBA1c), hypertension (by assessing blood pressure), use of any nephrotoxic drugs, or urinary tract obstruction (by ultrasound). An x-ray showed irregular radiolucent areas at the proximal end of the metatarsals of both hands (Figure 2).

Endoscopy and colonoscopy were performed to detect the presence of hemangioma. Endoscopy revealed grade 1 esophagitis of moderate intensity and erosive gastritis in the antrum. No vascular malformations were detected on colonoscopy.

Biopsy of the skin lesions was performed, which showed irregularly shaped, convoluted ectatic vascular malformation, lined by epithelial cells diagnosed as a cavernous haemangioma. There was no family history of Maffucci syndrome. He was referred to the Dermatology department for the treatment of face and hand lesions and to the Orthopaedic department for osteotomy and curettage of bone lesions. The patient is currently on dialysis and no other complications were observed on follow-up visits after osteotomy.

Discussion
We presented a case of a 37-year-old man who noticed multiple swellings on his hands at the age of 15, which is the typical age for the manifestation of Maffucci syndrome; in 78% of patients, symptoms appear at the age of 15 years. Maffucci syndrome is considered as a progressive form of Ollier’s disease. Enchondromas and haemangiomas are the main diagnostic features of Maffucci syndrome. Enchondromas are benign growth of cartilage that may develop at any site, but in Maffucci syndrome, enchondromas are found on phalanges and long bones. It may also affect ribs or skull bones. Soft tissue tumours usually develop within these bone lesions. Our patient presented with...
multiple enchondromas on both hands. Haemangiomata are benign tumours of blood vessels, which differentiates Maffucci syndrome from Ollier’s disease. Haemangiomata can occur anywhere around the body, and our patient presented with multiple haemangiomata on the face.

According to recent research, Maffucci syndrome occurs due to mutation of isocitrate dehydrogenase (IDH) enzymes 1 and 2 genes. Maffucci syndrome is considered as non-hereditary because mutations occur after fertilization. Mutations of parathyroid hormone-related protein-1 (PTHrP1) have also been linked to Maffucci syndrome; PTHrP1 mutation causes activation of the signalling pathway, which in turn leads to abnormal proliferation and differentiation of chondrocytes.

Diagnosis of Maffucci syndrome is made based on clinical, histopathological, and radiographic findings. Clinically, our patient had multiple enchondromas on both hands, a cystic firm mass on the left wrist, and cystic swellings on the face. Radiographically, patients with Maffucci syndrome present with translucency in the bony regions which are enchondromas, and opaque spots, which represent phleboliths. X-rays of our patient showed multiple well defined, irregular radiolucent areas in all metatarsals of both hands, which are typical radiographic findings in Maffucci syndrome. Histopathology of skin lesions in our patient revealed cavernous haemangiomas, which are characteristic of Maffucci syndrome. Clinical findings in combination with histopathological and radiographic findings confirmed the diagnosis of Maffucci syndrome in our patient.

Two distinct features of our patient were bilateral cataract and renal impairment. According to a literature search, to the best of our knowledge, this is the first case report of Maffucci syndrome where these findings are observed. The relationship between renal impairment and cavernous haemangiomas has been addressed in the past. Bui et al. published a case report in which they discussed a 23-year-old patient with multiple haemangiomata and end-stage renal disease. Although the end-stage renal disease has been suggested to be the cause of renal mesenchymal tumours, which include haemangiomata and angiomyolipoma, we suggest that it could be the other way around. Mesenchymal renal tumours or vascular malformation could cause renal impairment. Due to financial constraints and patient reluctance to undergo further diagnostic procedures, we could not confirm our findings to be part of Maffucci syndrome; PTHrP1 mutation causes activation of the signalling pathway, which in turn leads to abnormal proliferation and differentiation of chondrocytes.

We also emphasize the importance of diagnosing Maffucci syndrome early in the disease process. Multiple masses on limbs should prompt the diagnosis of Ollier’s disease or Maffucci syndrome. Our patient noticed swellings at the age of 15, but diagnosis did not occur until 37 years of age. Maffucci syndrome increases the risk of developing malignancy in patients. The overall incidence of malignancy in patients is 23-100%.

Recommendations

Enchondromas and haemangiomata that cause pain, thrombosis, fracture or other complications should be removed. Patients should be monitored regularly for any complications of enchondromas or haemangiomata. Cancer surveilance should also be done. Full body MRI should be done to find any obsolete haemangiomata. Organ functions should also be tested after the confirmation of diagnosis as Maffucci syndrome can affect any organ.

Strengths and weaknesses

The strength of this report is that is shows that regular screening of patients for cataracts and renal impairment can lead to avoidance of these complications. Unfortunately, since the patient had a poor socioeconomic status, we were unable to perform comprehensive diagnostic tests to confirm renal involvement as a part of Maffucci syndrome.

Conclusions

Our patient exhibited a typical case of Maffucci syndrome with two new features, bilateral cataract and renal impairment, never before reported in the literature, to the best of our knowledge. Cancer surveillance should also be done in patients after diagnosis, since Maffucci syndrome carries a high risk of malignancy.

Data availability

All data underlying the results are available as part of the article and no additional source data are required.

Consent

Written informed consent for publication of their clinical details and clinical images was obtained from the patient.

References


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