CASE REPORT

Case Report: Renal impairment and bilateral cataracts in a patient with Maffucci syndrome [version 1; peer review: 1 approved with reservations, 1 not approved]

Abid Nawaz¹ , Aqsa Iqbal², Nauman Shaukat¹, Muhammad Aslam Khan³, FNU Farukhuddin⁴ , Anil A. Kumar⁵, Vinesh Kumar⁶

¹Lady Reading Hospital, Peshawar, Illinois, 25000, Pakistan

²University of Illinois at Chicago, Chicago, Illinois, 60610, USA

³Bajwa Hospital, Lahore, Punjab, 54950, Pakistan

⁴Cleveland Medical Center, Cleveland, Ohio, 44106, USA

⁵St John's National Academy of Health Sciences, Bangalore, Karnataka, 560034, India

⁶South City Hospital, Karachi, Sindh, 75600, Pakistan

V1 First published: 04 Oct 2019, 8:1722
<https://doi.org/10.12688/f1000research.20366.1>

Latest published: 04 Oct 2019, 8:1722
<https://doi.org/10.12688/f1000research.20366.1>

Abstract

Maffucci syndrome is a sporadic, non-hereditary condition that is characterized by 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

Open Peer Review

Approval Status

	1	2
version 1 04 Oct 2019	view	view
1. Dennis Mazingi , University of Oxford, Oxford, UK		
2. Ian Murdoch , University College London, London, UK		
Any reports and responses or comments on the article can be found at the end of the article.

This article is included in the **Eye Health** gateway.

Corresponding author: Abid Nawaz (nawazabid1992@gmail.com)

Author roles: **Nawaz A:** Conceptualization, Data Curation, Investigation, Writing – Original Draft Preparation; **Iqbal A:** Conceptualization, Writing – Original Draft Preparation; **Shaukat N:** Conceptualization, Data Curation, Writing – Original Draft Preparation; **Khan MA:** Conceptualization, Data Curation; **Farukhuddin F:** Conceptualization, Writing – Review & Editing; **Kumar AA:** Conceptualization, Writing – Review & Editing; **Kumar V:** Conceptualization, Writing – Review & Editing

Competing interests: No competing interests were disclosed.

Grant information: The author(s) declared that no grants were involved in supporting this work.

Copyright: © 2019 Nawaz A *et al.* This is an open access article distributed under the terms of the [Creative Commons Attribution License](#), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

How to cite this article: Nawaz A, Iqbal A, Shaukat N *et al.* **Case Report: Renal impairment and bilateral cataracts in a patient with Maffucci syndrome [version 1; peer review: 1 approved with reservations, 1 not approved]** F1000Research 2019, 8:1722 <https://doi.org/10.12688/f1000research.20366.1>

First published: 04 Oct 2019, 8:1722 <https://doi.org/10.12688/f1000research.20366.1>

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 lymphangiomas¹. 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 syndrome². There is no gender or racial predilection, but the syndrome usually becomes evident by puberty in 78% of patients³. 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 syndrome⁴⁻⁷. 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 years². 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^{8,9}. Our patient presented with

Figure 1. Cystic swelling suggestive of lymphangioma (shown by black arrow at wrist) and nodular swellings on fingers both hands (shown by black arrows on fingers).

Figure 2. Radiolucent areas in both hands (shown by black arrows).

multiple enchondromas on both hands. Haemangiomas are benign tumours of blood vessels, which differentiates Maffucci syndrome from Ollier's disease. Haemangiomas can occur anywhere around the body, and our patient presented with multiple haemangiomas 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 fertilization¹⁰. 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 chondrocytes¹¹.

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 phleboliths¹². 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 haemangiomas and end-stage renal disease¹³. Although the end-stage renal disease has been suggested to be the cause of renal mesenchymal tumours, which include haemangioma and angiolipoma, 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, but we firmly believe that renal impairment in our patient is a manifestation of Maffucci syndrome as we ruled out all other causes of

renal impairment. We recommend monitoring renal function in patients with Maffucci syndrome. Several case reports discuss the involvement of various organs in patients with Maffucci syndrome. Involvement of the liver, spleen, adrenal gland, and brain have been reported in the literature^{14,15}.

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%¹⁶.

Recommendations

Enchondromas and haemangiomas that cause pain, thrombosis, fracture or other complications should be removed. Patients should be monitored regularly for any complications of enchondromas or haemangiomas. Cancer surveillance should also be done. Full body MRI should be done to find any obsolete haemangiomas. 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 it 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 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

- Gao H, Wang B, Zhang X, *et al.*: **Maffucci syndrome with unilateral limb: a case report and review of the literature.** *Chin J Cancer Res.* 2013; **25**(2): 254–258. [PubMed Abstract](#) | [Publisher Full Text](#) | [Free Full Text](#)
- Bean WB: **Dyschondroplasia and hemangiomata (Maffucci's syndrome).** *II. AMA Arch Intern Med.* 1958; **102**(4): 544–550. [PubMed Abstract](#) | [Publisher Full Text](#)
- Lewis RJ, Ketcham AS: **Maffucci's syndrome: functional and neoplastic significance. Case report and review of the literature.** *J Bone Joint Surg Am.* 1973; **55**(7): 1465–1479. [PubMed Abstract](#)
- Schnall AM, Genuth SM: **Multiple endocrine adenomas in a patient with the Maffucci syndrome.** *Am J Med.* 1976; **61**(6): 952–956. [PubMed Abstract](#) | [Publisher Full Text](#)
- Jirattananaphochai K, Jitpimolmard S, Jirattananaphochai K: **Maffucci's syndrome with frontal lobe astrocytoma.** *J Med Assoc Thai.* 1990; **73**(5): 288–293. [PubMed Abstract](#)

6. Huang XD, Jiao HS, Yang Z, *et al.*: **Sclerosing angiomatoid nodular transformation of the spleen in a patient with Maffucci syndrome: a case report and review of literature.** *Diagn Pathol.* 2017; **12**(1): 79.
[PubMed Abstract](#) | [Publisher Full Text](#) | [Free Full Text](#)
7. Pezzilli R, Serra C, Tomassetti P, *et al.*: **Maffucci Syndrome with Hemangioma of the Liver.** *Case Rep Gastroenterol.* 2009; **3**(1): 1–4.
[PubMed Abstract](#) | [Publisher Full Text](#) | [Free Full Text](#)
8. Biber C, Ergun P, Turay UY, *et al.*: **A case of Maffucci 's syndrome with pleural effusion: ten-year follow-up.** *Ann Acad Med Singapore.* 2004; **33**(3): 347–350.
[PubMed Abstract](#)
9. Duke D, Dvorak A, Harris TJ, *et al.*: **Multiple retiform hemangioendotheliomas. A low-grade angiosarcoma.** *Am J Dermatopathol.* 1996; **18**(6): 606–610.
[PubMed Abstract](#) | [Publisher Full Text](#)
10. Prokopchuk O, Andres S, Becker K, *et al.*: **Maffucci syndrome and neoplasms: a case report and review of the literature.** *BMC Res Notes.* 2016; **9**: 126.
[PubMed Abstract](#) | [Publisher Full Text](#) | [Free Full Text](#)
11. Gupta N, Kabra M: **Maffucci syndrome.** *Indian Pediatr.* 2007; **44**(2): 149–150.
[PubMed Abstract](#)
12. Zwenneke Flach H, Ginai AZ, Wolter Oosterhuis J: **Best cases from the AFIP. Maffucci syndrome: radiologic and pathologic findings.** *Armed Forces Institutes of Pathology. Radiographics.* 2001; **21**(5): 1311–1316.
[PubMed Abstract](#) | [Publisher Full Text](#)
13. Bui TL, Glavis-Bloom J, Liu HK: **Multiple renal capillary hemangiomas in a patient with end-stage renal disease.** *Radiol Case Rep.* 2019; **14**(6): 750–754.
[PubMed Abstract](#) | [Publisher Full Text](#) | [Free Full Text](#)
14. Büttner M, Kufer V, Brunner K, *et al.*: **Benign mesenchymal tumours and tumour-like lesions in end-stage renal disease.** *Histopathology.* 2013; **62**(2): 229–236.
[PubMed Abstract](#) | [Publisher Full Text](#)
15. Puech-Bret N, Bret J, Bennet A, *et al.*: **Maffucci syndrome and adrenal cortex tumor.** *Joint Bone Spine.* 2009; **76**(5): 556–558.
[PubMed Abstract](#) | [Publisher Full Text](#)
16. Ahmed SK, Lee WC, Irving RM, *et al.*: **Is Ollier's disease an understaging of Maffucci's syndrome?** *J Laryngol Otol.* 1999; **113**(9): 861–864.
[PubMed Abstract](#) | [Publisher Full Text](#)

Open Peer Review

Current Peer Review Status: ? ✖

Version 1

Reviewer Report 01 July 2021

<https://doi.org/10.5256/f1000research.22382.r88615>

© 2021 Murdoch I. This is an open access peer review report distributed under the terms of the [Creative Commons Attribution License](#), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Ian Murdoch

Institute of Ophthalmology, University College London, London, UK

The authors describe a case of Maffucci's syndrome in which two additional findings were noted: renal impairment and cataract. Whilst the literature review seems reasonable given the background to the syndrome and prior reports, the two novel findings are inadequately presented. As my fellow reviewer points out, some more detailed medical history and further simple (not expensive) tests might have helped with the renal impairment. From an ophthalmological point of view the description is totally inadequate. Again, history and examination details are required (FH, past medical history including other potential causes for cataract, present history, refraction, acuity, ocular status, type of cataract etc).

Whilst I totally agree that with such rare conditions case-reports are completely appropriate; if they are to be of use then some concentration needs to be shown on firstly ensuring the correct diagnosis, and secondly detailing the novel finding as much as possible. I appreciate the difficulties of working in resource poor environments but that does not stop good basic medical examination.

Is the background of the case's history and progression described in sufficient detail?

No

Are enough details provided of any physical examination and diagnostic tests, treatment given and outcomes?

No

Is sufficient discussion included of the importance of the findings and their relevance to future understanding of disease processes, diagnosis or treatment?

No

Is the case presented with sufficient detail to be useful for other practitioners?

No

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Ophthalmology, glaucoma, epidemiology, public health, telemedicine, health economics, education

I confirm that I have read this submission and believe that I have an appropriate level of expertise to state that I do not consider it to be of an acceptable scientific standard, for reasons outlined above.

Reviewer Report 09 April 2021

<https://doi.org/10.5256/f1000research.22382.r81917>

© 2021 Mazingi D. This is an open access peer review report distributed under the terms of the [Creative Commons Attribution License](#), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Dennis Mazingi

Nuffield Department of Medicine, University of Oxford, Oxford, UK

Thank you for the opportunity to read this report. It describes a brief case of Maffucci's syndrome with two unique clinical findings not seen before in the literature. The authors describe the case and then offer possible explanations for renal failure. While they failed to substantiate their argument for renal failure, it remains an interesting theory. This report has the potential to assist clinicians in the future to be mindful of the potential issues that patients with Maffucci's syndrome may face it may be premature to recommend routine screening for cataracts and renal failure since this is the only case that has seen this combination of findings.

Because this was a brief report whose aim was to report an interesting clinical finding there are not many details on the treatment or follow-up of this patient as laid out in the SCARE guidelines. However, it may have been interesting to describe the implications of the clinical findings on further management or prognosis. For example, what is the implication of renal failure on operative management, perioperative risk and the decision to operate in someone with end-stage renal impairment when the reasons for the operation were for aesthetic reasons or for mild functional impairment? In this way, they could have made the case more impactful. In addition, the patient's perspective was not explicitly described as well as their reasons for refusal of potentially helpful investigations. The authors state that they ruled out other causes of hypertension with multiple tests but did not present the results of said tests for the reader to use for themselves. There are also other simple tests that may have helped to narrow down the cause of the renal failure.

Is the background of the case's history and progression described in sufficient detail?

Partly

Are enough details provided of any physical examination and diagnostic tests, treatment

given and outcomes?

Partly

Is sufficient discussion included of the importance of the findings and their relevance to future understanding of disease processes, diagnosis or treatment?

Yes

Is the case presented with sufficient detail to be useful for other practitioners?

Yes

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Surgery, Global surgery, congenital malformations

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

The benefits of publishing with F1000Research:

- Your article is published within days, with no editorial bias
- You can publish traditional articles, null/negative results, case reports, data notes and more
- The peer review process is transparent and collaborative
- Your article is indexed in PubMed after passing peer review
- Dedicated customer support at every stage

For pre-submission enquiries, contact research@f1000.com

F1000Research