Case Report

Melorheostosis, an extremely rare disease

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ABSTRACT

Introduction: Melorheostosis is a rare disorder characterized by mesodermal dysplasia of bone. Melorheostosis usually affects the long bones of the upper and lower limbs but may also involve the short bones of the hand, foot and axial skeleton. The incidence is 0.9 cases per million inhabitants, affects men and women in equal proportions, and cases have been described in children and adults.

Methods: We present a 35 year-old female, with an egg-sized lump and sharp pain over her right calf with no limitation of knee or ankle motion. Radiography of the affected segments showed dripping candle wax sign which is similar to chronic Osteomyelitis.MRI revealed intramuscular vascular lesion with no evidence of erosion or bone destruction. Histological findings after open biopsy are nonspecific and showed chronic inflammation process with no malignant cells in bone specimen and hemangioma in muscular speciment.

Results: Diagnosis of melorheostosis were concluded by combining the clinical examination, radiological results and histopatological findings in clinicopathological conference. The patient has been treated with a non-steroidal anti-inflammatory drug (sodium diclofenac 2x50 mg) with good symptomatic response.

Conclusion: Diagnosis of melorheostosis is achieved by a combination of clinical assessments, imaging tests and histological findings to differ it from infection and other bone tumors. There areno specific treatments, and symptomatic by using nonsteroidal anti-inflammatory drugs produce good symptomatic result. More research onetiology of melorheostosis isneeded.

ABSTRAK

Pendahuluan: *Melorheostosis merupakan suatu kelainan langka yang ditandai dengan displasia mesoderm tulang. Melorheostosis biasanya terjadi pada tulang panjang ekstremitas atas dan bawah namun dapat juga mengenai tulang pendek dari tangan, kaki, dan tulang aksial. Insiden terjadi pada 0,9 kasus dari jutaan penduduk, mengenai laki – laki dan perempuan dengan proporsi yang sama, serta telah dideskripsikan pada anak dan dewasa.*

Metode: *Kami mempresentasikan perempuan berusia 35 tahun dengan benjolan seukuran telur dan nyeri tajam pada betis kanan tanpa limitasi pergerakan lutut atau pergelangan kaki. Pemeriksaan radiografi pada segmen yang terkena menunjukkan tanda dripping candle wax yang sama dengan osteomielitiskronis. MRI menunjukkan lesivaskuler intramuscular tanpa tanda erosi atau destruksi tulang. Temuan histologist setelah open biopsy menunjukkan hasil non spesifik dan proses inflamasi kronis tanpa sel ganas pada specimen tulang dan hemangioma pada specimen otot.*

Hasil: *Diagnosis melorheostosis ditegakkan dengan kombinasi pemeriksaan klinis, hasil radiografis, dan temuan histopatologis dalam Clinicopathological conference. Pasien mendapat terapi obat anti inflamasi non steroid (sodium diklofenak 2x50mg) dengan respon simptomatis yang baik.*

Kesimpulan: *Diagnosis melorheostosis didapatkan dengan kombinasi asesmen klinis, pemeriksaan radiografis, dan temuan histologist untuk membedakannya dengan infeksi dan tumor tulang lainnya. Tidak didapatkan terapi spesifik, dan terapi simptomatik dengan obat anti inflamasi non steroid menunjukkan hasil yang baik. Diperlukan penelitian lebih dalam haletiologi melorheostosis.*

Keywords: Melorheostosis, mesodermal dysplasia, hyperostosis

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INTRODUCTION

Melorheostosis (synonyms: candle bone disease, melting wax syndrome, Leri disease), first described by Leri and Joanny in 1922, is a rare benign sclerosing bone dysplasia. Melorheostosis is a rare disorder characterized by mesodermal dysplasia of bone.[1] Melorheostosis usually affects the long bones of the upper and lower limbs but may also involve the short bones of the hand and foot and, rarely, the axial skeleton.[2] The name of the disease derives from combining two Greek words, melos (member or limb) and rhein (flow), producing a "flowing limb" describing the radiographic appearance of hyperostosis resembling molten wax running down the cortex of the bone. Men and women are equally affected, and no hereditary features have been discovered. The incidence is 0.9 cases per million inhabitants,[3] and there are approximately 300 cases described in the literature.
Melorheostosis affects men and women in equal proportions, and cases have been described in children and adults. The etiology is unknown, despite several theories proposed over the past several years (vascular alterations, inflammatory processes and embryonic or genetic defects).[4] The diagnosis, in most cases, can be attained by radiographic assessment ("dripping candle wax" sign)[5] and can be aided by analytical (normal serum calcium, phosphorus and alkaline phosphatase) and anatomopathological tests (the histological findings are nonspecific and often show a mixture of mature and immature bones in a dense formation with increased trabecular bone) or by scintigraphy (higher uptake).[5]

Case Presentation

A 35 year-old female presented to our hospital with a chief complain of an egg-sized lump and sharp pain over her right calf. The lump and pain lasts for the last 14 years. In the past 3 months before the admission, the pain was constantly felt, especially when she was walking, which was then relieved after resting. No history of trauma in that region and weight loss. No history of malignancy in her family. There was also no other location of involvement clinically.
On physical examination, it was found an immobile, irregular, diffuse,soft, skin-coloredlump on her right calf with size of 4 x 3 x 3 cm. There was no limitation of ankle and knee motion.

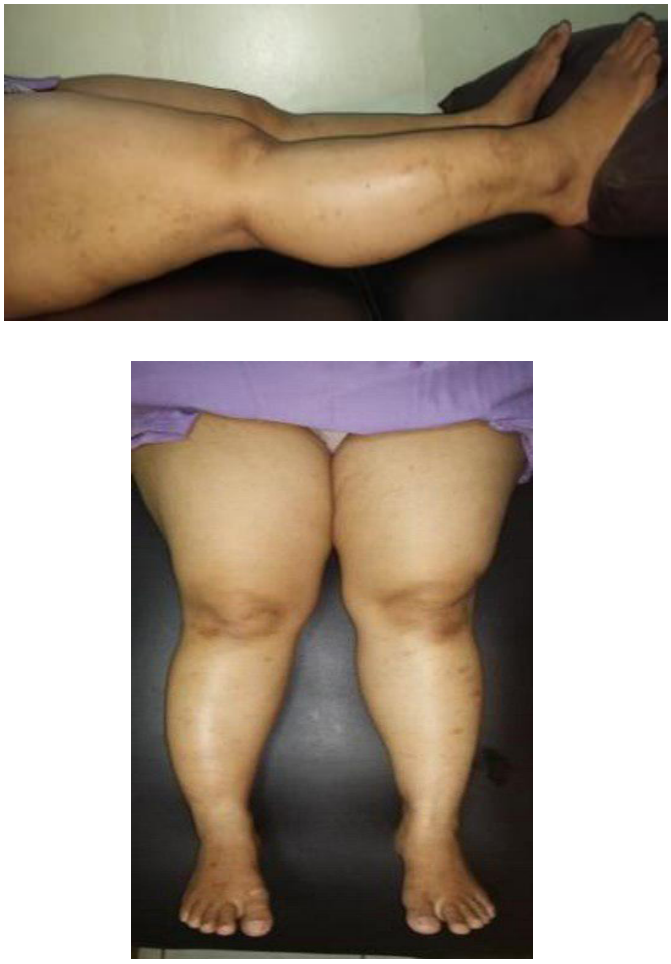

Figure 1. clinical picture of patient

Laboratory findings showed haemoglobin level of 13.0 mg/dl (12.0-15 mg/dl), hematocryt of 40% volume (36-46 %), leukocyt 9.9x10^3/ul, andalkaline phosphatase level of 212 ul (<119).
Radiographs of the affected segments showed dripping candle wax sign. MRI examination revealed vascular lesion from proximal to distal thirdof the right lower leg on lateral portion, with no evidence of erosion or destruction from the right tibia or fibula

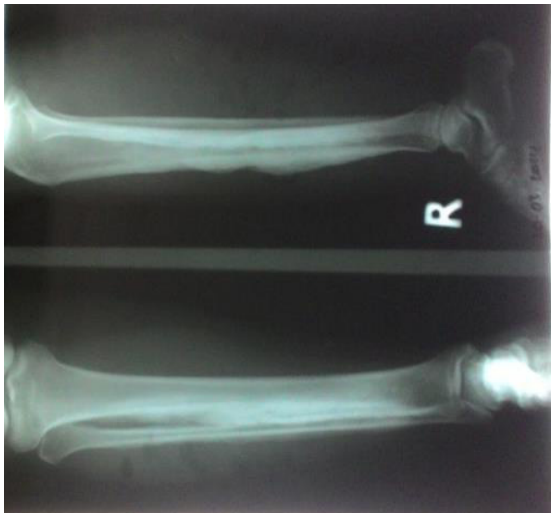

Figure 2. X-ray of right leg (AP/Lat) Showing dripping candle wax signs

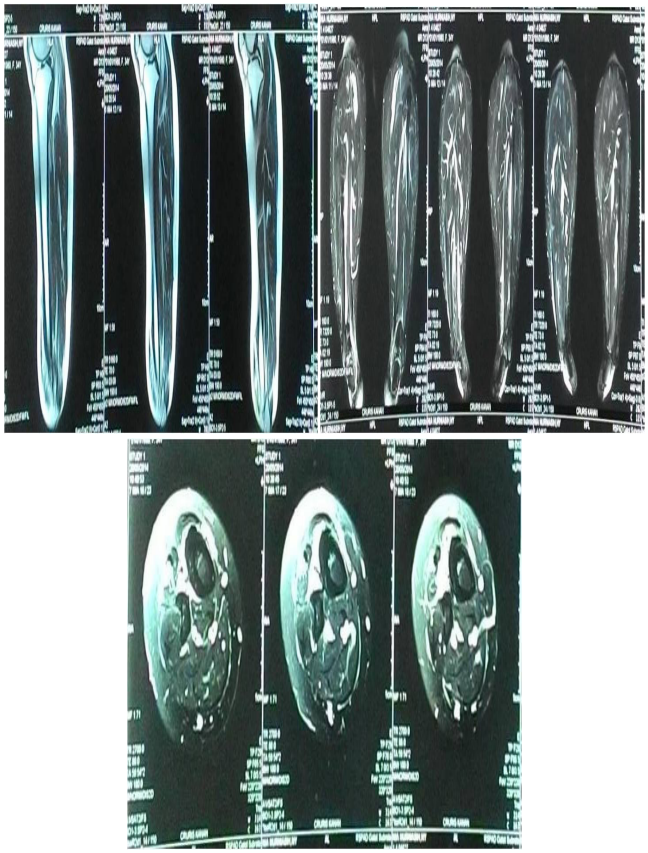

Figure 3. MRI examination revealed vascular lesion from proximal to distalone-third ofthe right lower leg on lateral portion, no evidence of erosion or destruction from the right tibia or fibula

We performed open biopsy to define the diagnosis. Histological findings after open biopsy are nonspecific and showed chronic inflammation process with no malignant cells in bone specimen and hemangioma in muscular speciment.

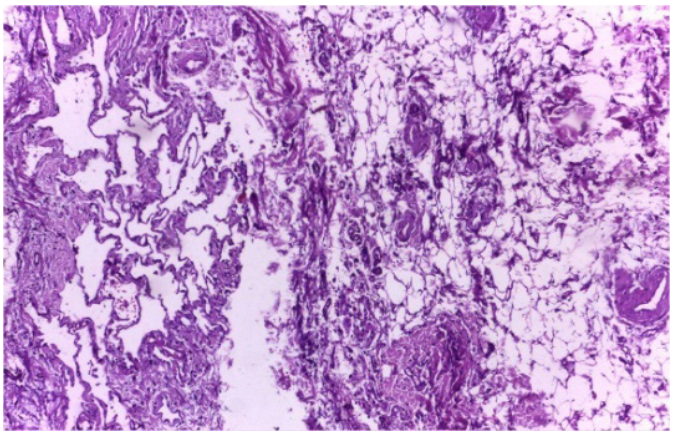

Figure 4. Hemangioma intramuscular in HE (100x magnification)

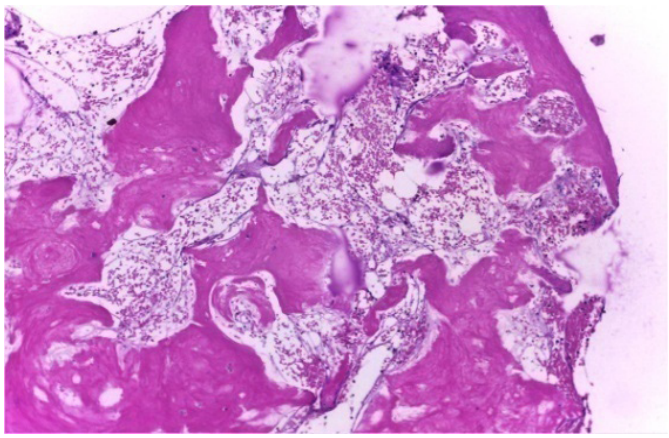

Figure 5. Sclerotic bone in HE (100x magnification)

Diagnosis of melorheostosis were concluded by combining the clinical examination, radiological results and histopatological findings in clinicopathological conference. The patient was treated with a non-steroidal anti-inflammatory drug (sodium diclofenac 2x50 mg) with good symptomatic response.

DISCUSSION

Melorheostosis is a rare disease that was first described in 1922 by Leri and Joanny.[6] It can occur at any age and affects both sex equally.[7] The etiology is unknown, although several theories have been proposed, such as a mesenchymal cell differentiation defect (genetic mutation in LEMD3), vascular disorders or inflammatory processes.[4] None of these theories have been completely proven. The symptoms vary considerably from asymptomatic to severe pain with associated deformity. Melorheostosisis usually of insidious onset with pain,

joint stiffness, skin alterations and bone deformity.[8]Our patient began to experience intermitten pain since 15 years ago at her lower limb. She also experienced lump which sometimes resolves without any medication. Melorheostosis mainly affects the long bones of the upper and lower limbs and also the short bones of the hand and foot, but rarely the axial skeleton [9,10]. The condition can be either monostotic or polyostotic if it affects one or many bones,respectively. The distribution in our patient was monostotic since the lesion was only located at thelower limb.

From the laboratory examination, the differential diagnosis could be either infection or bone malignancy. In infection, the leucocyte is elevated, while in this case, the result was normal. In bone tumor, the alkaline phosphatase is highly elevated but in Melorheostosis the result is slightly elevated. However, the laboratory examination from many studies revealed normal results.[1,4,9] This study had the same result but a slight elevation in alkaline phosphatase level.

In radiographic findings, typical "dripping candle wax" sign was seen in patient's tibia diaphysis. The diagnosis ofmelorheostosis is commonly based on radiographic examination because the histological findings are nonspecific and often show a mixture of mature and immature bone and non-specific inflammatory process.

Melorheostosis is characterized by areas of hyperostosis with increased cortical bone thickness and linear density areas in the cortex that can extend into cancellous bone. Thiscondition might lead to a painful sensation.[6]In MRI examination ofour patient, it was shown cortical bone thickening and oedema in muscular tissue. In another specimen, we also found fibrofatty tissue and fragments of muscle with several thick-walled and thin-walled vessels, which was concluded as intramuscular haemangioma. This was found in musculus tibialis anterior. In our opinion, these findingsmayalso lead to a painful sensation in our patient. More research about etiology of pain in melorheostosis areneeded.

There is no specific treatment for melorheostosis, rather, treatment is symptomatic and involves the use of analgesic or anti-inflammatory drugs.[3] Surgical treatment is reserved for contractures and deformities. Our patient was treated with a nonsteroidal anti-inflammatory drug (natriumdiclofenac 2x50 mg) with good symptomatic response. This treatment was in accordance with other reports available from Kumar et al[1] and Alpoim*et al*.[8]

CONCLUSION

Diagnosis of melorheostosisis achieved by a combination of clinical assessment, imaging tests and histological findings to differ it from infection and other bone tumors. There areno specific treatments, and symptomatic using nonsteroidal anti-inflammatory drugs produce good symptomatic results. More research about etiology of melorheostosis areneeded.

Conflict of interest

Author declared that there are no conflict of interests at the time of the construction of the case series.

REFERENCES

1. Kumar R, Sankhala SS . Melorheostosis- case report of rare case. Journal of Orthopaedic case reports 2014 April-June 4(2):page25-27
2. Greenspan A, Azouz EM. Bone dysplasia series: melorheostosis: review and update. Can Assoc Radiol J. 1999;50:324–330
3. Abdullah S, Pang Gerry. Case report : melorheostosis of the ulna.Journal of Chineese Medical Assoc.74 (2011) : 469-472
4. Dillehunt RB, Chuinard EG. Melorheostosis leri: a case report. J Bone Joint Surg Am 1936;18:991e6.
5. Freyschmidt J. Melorheostosis: a review of 23 cases. Eur Radiol 2001;11: 474e9.
6. Hoshi K, Amizuka N, Kurokawa T, Nakamura K, Shiro R, Ozawa H. Histopathological characterization of melorheostosis. Orthopaedics 2001; 24:273e7.
7. Gagliardi GG, Mahan KT. Melorheostosis: a literature review and case report with surgical considerations. J Foot Ankle Surg 2010;49:80e5
8. Alpoim PB, Rodrigues M, Marques A, et al. Melorheostosis : a case report. Rev Bras Ortop.2013;48(3):282-285
9. Long HT, Li KH, Zhu Y. Case report: severe melorheostosis involving the ipsilateral extremities. Clin Orthop Relat Res. 2009;467(10):2738-43.
10. Clifford PD, Jose J. Melorheostosis. Am J Orthop (Belle Mead NJ). 2009;38(7):360-1.