CASE REPORT

An Unusual Case of Recurrent Limb Pain in Childhood

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Abstract

Recurrent limb pain may be the first and only manifestation of migraine in childhood. However, the close temporal relation of limb pain with headache is unusual, making migraine limb pain difficult to diagnose. A 6-year-old boy was referred with growing pains in the last four years. He presented recurrent attacks of bilateral shin pain, typically developing during the night but also in the morning, two or more times per week. He became pale during episodes and always needed analgesics for pain relief. Physical examination and investigation were normal. His father had growing pains and migraine since his childhood. The treatment with propranolol resulted in significant improvement of the episodes. Considering the prevalence of migraine and growing pains in the population, we suggest that migraine limb pain may be underdiagnosed. In children with recurrent limb pain and personal or family history of migraine, it is important to consider the migraine limb pain diagnosis.

Keywords: Child; Genetic Predisposition to Disease; Extremities; Migraine Disorders/complications; Migraine Disorders/diagnosis; Musculoskeletal Pain/diagnosis; Musculoskeletal Pain/etiology; Pain/diagnosis; Pain/etiology

Introduction

Non-inflammatory musculoskeletal pain in children is a common reason for referral to pediatric rheumatology.[1] Recurrent limb pain is defined by the presence of two or more limb pain episodes over the course of a year, lasting less than 72 hours, without associated clinical signs or other explanation for the pain.[2] The prevalence of recurrent limb pain of unknown etiology in children ranges from 2.6% to 33.6%[3] and growing pains are one of the most common causes.[4]

Recurrent limb pain may be the first and only manifestation of migraine in childhood,[5] being described in 43% of childhood migraineurs.[2] The temporal relation of limb pain with headache in children is unusual, making the diagnosis of migraine limb pain harder[3] and often misdiagnosed as growing pains.

Case Report

A 6-year-old boy was referred to the pediatric rheumatology department due to recurrent limb pain. His symptoms had begun four years before and were previously classified as atypical growing pains. Recurrent limb pain consisted in stereotyped pain attacks of a diffuse shin pain, bilateral or alternating unilateral, sparing the joints. The episodes were typically during the second third of the night (sometimes evening or morning), with a moderate to severe intensity, interfering with sleep. During the last two years, the recurrent limb pain became more frequent and intense. On average, he experienced about 10 pain attacks per month, lasting from 30 minutes to two hours, with complete symptoms remission between episodes. The pain presented a slight improvement after massage, but analgesics were regularly required for total pain relief. There was no cutaneous allodynia nor other accompanying symptoms beyond pallor, namely headache, nausea, vomiting, photophobia, or phonophobia. His parents noticed worsening pain attacks after more intense physical activities. He had no medical history of recurrent headache or abdominal pain; he only had asthma until 2-years-old. His father suffered from migraine since he was 7-years-old and had recurrent limb pain from 5 to 12-years-old. His physical examination was normal. The investigation carried out prior to referral to rheumatology, including laboratory tests with complete blood cell count, erythrocyte sedimentation rate, ferritin, 25-hydroxyvitamin D levels, lower limb radiography, and bone scintigraphy, was normal (Table 1). Supplementation with cholecalciferol (20 000 UI, single take) and iron (3 mg/kg/day, three months) was initiated. There was normalization of iron (with ferritin

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levels above 50 ng/mL) and 25-hydroxyvitamin D serum levels, but no improvement of recurrent limb pain was observed.

Bearing in mind the stereotyped recurrent limb pain attacks with a normal investigation associated with similar symptoms during childhood and migraine in his father, we assumed migraine limb pain as the most probable diagnosis. The high recurrence of episodes led us to initiate treatment with propranolol 10 mg twice daily (later increased to three times per day), which resulted in a dramatic improvement of the frequency and severity of pain attacks. At the six-month follow-up, the child had sporadic limb pain attacks with lower intensity and duration.

Table 1. Investigation results

Laboratory test	Result
Blood count cells	Hemoglobin: 13.4 g/dL Leucocytes: 8,200/µL (neutrophils 3,600/µL, lymphocytes 3,900/µL) Platelets: 208,000/µL
Erythrocyte sedimentation rate	8 mm/hour
Phosphocalcic markers	25-hydroxyvitamin D: 0.23 ng/mL (normal range: 30-99 ng/mL) Calcium: 8.7 mg/dL Phosphorus: 4.5 mg/dL Parathormone: 32.4 pg/mL
Iron metabolism markers	Serum iron: 55 µg/dL (normal range: 100-150 µg/dL) Ferritin: 28.5 ng/mL

Discussion

Considering the normal investigation and physical examination in this child, we could be facing a case of growing pains, restless legs syndrome, or migraine limb pain.

The description of pain attacks initially suggests the diagnosis of common growing pains.[5,6] However, several features were atypical for common growing pains and had motivated the investigation done prior to the rheumatology consultation referral, such as the time onset during the day or night, typically occurring at the second third of the night and sometimes in the morning, the prolonged duration of pain, and the constant need for analgesics to resolve pain (Table 2). The causes of growing pains in children are still poorly understood,[7] but current evidence suggests that common growing pains could be a manifestation of vitamin D deficiency.[8] These authors found that 94% of the children with common growing pains had hypovitaminosis D and 72% of them were deficient. Considering that, the absence of clinical improvement with cholecalciferol supplementation made this diagnosis less likely.

The diagnosis of restless legs syndrome was also evoked. Despite the occurrence of restless legs syndrome in children and adolescents,[9] its diagnosis can be quite challenging because of children's inability to verbalize symptoms and the existence of significant overlap with common growing pains.[10] Restless legs syndrome typically presents as recurrent limb pain that is accompanied by an urge to move, and that gets better with movement,[9] which was not seen in this child (Table 2). Given the known evidence of the low iron stores role in restless leg syndrome pathophysiology, and the described benefit of iron therapy (and ferritin levels above 50 ng/mL) in reducing the symptoms,[10] iron supplementation was introduced for three months. The clinical course of recurrent limb pain was not modified, making this diagnostic hypothesis even less likely.

Migraine limb pain is often underdiagnosed.[8] Beyond the symptoms that are similar to other diseases, it may not be temporally related to the typical headache, making the diagnosis harder.[8] However, several characteristics of the pain attacks made the clinicians think that it might be migraine limb pain (Table 2). Namely, its paroxysmal character, the time onset and duration of the episodes, the accompanying pallor, and the precipitating and relieving factors of pain that are similar to migraine (Table 2). On the other hand, a significant clue to the migraine limb pain diagnosis was the family history of migraine and similar episodes during childhood in his father. There are even a few reports about familial recurrent limb pain,[2,11] some of them suggesting clinical similarities shared with familial hemiplegic migraine.[2] After the presumptive diagnosis of migraine limb pain, the clinical response to migraine prophylactic treatment with propranolol reinforced the diagnosis.

The literature is scarce about the specific management of migraine limb pain in children, but it might be extrapolated from migraine management.[12,13] In spite of the previous equivocal results in pediatric migraine, propranolol has shown to be effective for migraine,[14] abdominal migraine[15] and migraine limb pain prevention.[2,3] In this child, the asthma antecedent demanded caution in propranolol administration due to the known effects of increased bronchial obstruction and the airway reactivity of the beta blockers drugs.[11] However, propranolol was instituted in this patient since he had good asthma control during the last four years, and the clinical improvement of recurrent limb pain was observed without any recorded respiratory side effects.

Children with migraine may have recurrent episodes of a diversity of isolated sensory, psychomotor, autonomic, or cognitive symptoms other than headache.[15] These syndromes have been classified as migraine variants or

Table 2. Differential diagnosis: patient clinical findings and clinical findings consistent with the diagnosis of migraine limb pain, growing pains, and restless legs syndrome

	Patient	Migraine limb pain [2,3,15]	Growing pains[5,6]	Restless legs syndrome[9]
Age of beginning	2 years	Variable (frequently childhood, but also affects adults)	3-12 years	Variable (children and adults)
Frequency	Intermittent	Intermittent	Intermittent	Intermittent
Pain time/onset	Midnight, sometimes evening or in the morning	Day or night	Evening or sometimes late afternoon, never in the morning	Day or night, mostly night and evening
Pain duration	Variable, from minutes to hours (average two hours)	Variable, from a few minutes to three days, usually a few hours	Always less than two hours	Variable, from several minutes to hours
Pain location	Shins Alternating unilateral or bilateral	Variable, excluding joints Upper or lower limbs Unilateral or bilateral simultaneously	Calves, thighs, shins, or popliteal fossa Usually bilateral	Mostly legs (may affect arms and other body parts) Bilateral
Pain severity	Moderate to severe Can wake from sleep Slight improvement with massage, always requires an analgesic	Moderate to severe Can wake from sleep Need for analgesic and rest	Mild to severe Can wake from sleep Improves with simple measures (massage and analgesics)	Mild to severe Can wake from sleep Associated with an urge to move Improves with movement
Daily activities impact	No	Yes	No	Yes
Pulsatile pain	Yes	Frequently	Not described	Not described
Allodynia	No	Frequently	No	No
Associated symptoms	Pallor	Gastrointestinal, neurological and vasomotor symptoms Swelling limb, skin's temperature changes	No	Uncomfortable and unpleasant sensations in the legs
Stereotyped attacks	Yes	Yes	Yes	Yes
Precipitating factors	More intense physical activities	Physical or psychologic stress	No	No (worsen during rest or inactivity)
Familial history	Yes	Yes	Sometimes	Yes
Response to migraine prophylactic treatment	Yes	Yes	Not described	Not described

migraine equivalents and it might precede in several years, accompany or follow the headache episodes[3] and indicate a later evolution to typical migraine.[14] Some authors defend the position that limb pain is part of the migraine syndrome and not only migraine precursors.[2,14] Migraine limb pain involves benign episodes[2] that convert into different forms of periodic syndromes, especially migraine.[3,11] The appearance of migraine frequently coincides with the disappearance or reduced severity of migraine variants,[2,3,11] such as migraine limb pain, usually during adolescence.

The high frequency of migraine and growing pains in the population, associated with the also high incidence of migraine in children with growing pains,[4] suggests that several migraine limb pain cases may be misdiagnosed as common growing pains. Therefore, some clinical features of recurrent limb pain episodes associated with a personal or family history of migraine should lead to the consideration of a migraine limb pain diagnosis.

WHAT THIS CASE REPORT ADDS

- Migraine limb pain is an underdiagnosed migraine variant.
- Recurrent limb pain is frequently mistaken for joint or bone pathology, psychological disturbance, and mostly growing pains.
- Family history of migraine or limb pain is usually present and should lead to the consideration of this diagnosis.
- Migraine limb pain improves with analgesics and migraine preventive treatment.

Conflicts of Interest

The authors declare that there were no conflicts of interest in conducting this work.

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Confidentiality of data

The authors declare that they have followed the protocols of their work centre on the publication of patient data.

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Um Caso Raro de Dor Recorrente dos Membros na Criança

Resumo:

A dor recorrente nos membros pode ser a primeira e única manifestação de enxaqueca na infância. Contudo, a sua relação temporal com a típica cefaleia é incomum, dificultando o seu diagnóstico. Apresentamos o caso de uma criança de 6 anos, sexo masculino, referenciado à consulta de reumatologia por dores de crescimento nos últimos quatro anos. Referia episódios recorrentes de dor intensa na região tibial anterior, bilateralmente, tipicamente noturnas, mas por vezes matinais, duas ou mais vezes por semana. Durante os episódios ficava pálido e precisava de analgesia para alívio da dor. O exame físico e a investigação realizada foram normais. O pai referia dores de crescimento na infância e enxaqueca desde então. Foi instituída terapêutica com propranolol verificando-se uma melhoria significativa dos episódios. Considerando a prevalência de enxaqueca e de dores de crescimento na população, sugerimos que a dor nos membros associada a enxaqueca pode estar subdiagnosticada. Em crianças com dores recorrentes nos membros e história pessoal ou familiar de enxaqueca, é importante considerar este diagnóstico.

Palavras-Chave: Criança; Dor/diagnóstico; Dor /etiologia; Dor Musculosquelética/diagnóstico; Dor Musculosquelética/etiologia; Extremidades; Predisposição Genética para Doença; Transtornos de Enxaqueca/complicações; Transtornos de Enxaqueca/diagnóstico