Leg pain at night: is it serious?

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CASE SCENARIO

Jessie is a 3-year-old girl who is usually well and happy. Over the past three months, she has been waking up almost every night crying and telling her parents that she has a sore leg. She identifies the area of pain in the same calf all the time and is very reluctant to let her parents touch it. Jessie resists any attempt to allow her calf to be massaged, or even handled to see if she in fact has a cramp. She can be in pain for up to an hour, but eventually settles back to sleep after warm milk and paracetamol. During the day, she is active and does not limp, the leg looks totally normal and she is quite happy to allow her leg to be examined.

What is the most likely cause of Jessie's pain, and how should it be managed?

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TABLE 1. DEFINITION OF GROWING PAINS – INCLUSION AND EXCLUSION CRITERIA

Pain factors	Inclusion criteria	Exclusion criteria
Nature of pain	Intermittent Some pain-free days and nights	Persistent Increasing intensity
Unilateral or bilateral	Bilateral	Unilateral
Location of pain	Anterior thigh, calf, posterior knee – in muscles	Joint pain
Onset of pain	Late afternoon or evening	Pain still present the next morning
Physical examination	Normal	Swelling, erythema, tenderness Local trauma or infection Reduced joint range of motion Limping
Laboratory tests	Normal	Objective findings e.g. erythrocyte sedimentation rate, x-ray, bone scan abnormalities
Limitation of activity	Nil	Reduced physical activity

COMMENTARY

Leg pains that interrupt the sleep of young children, and hence also the sleep of their parents, are not an unusual presentation in clinical practice. In this situation, the primary issue to address is whether there is an overt disease process or whether it is a more 'benign' condition.

Diagnosis

The differential diagnoses should include the possibility of a bone tumour, infection, a seronegative arthropathy, an injury or nonspecific leg pains. Fortunately the latter is the most common presentation, but the sinister nature of a tumour always warrants consideration and investigation (e.g. imaging, blood tests). The nonarticular location of the pain site suggests that a seronegative arthritis is less likely; similarly the daytime normalcy indicates that infection or injury (e.g. greenstick fracture) is less suspect.

In an otherwise well and happy child such as Jessie, the cause of such presentation is most likely to fall under the 'growing pains' label. While often met with howls of derision, growing pains is a legitimate (if ill-defined) condition. Although there is no single pathognomic test for growing pains, it can be diagnosed on the basis of both inclusion and exclusion criteria (see Table 1). If the stipulated criteria are observed and adhered to, misdiagnoses of children with less common but more serious conditions are unlikely. A recent matched case-control study concluded that growing pains remains a clinical diagnosis and if the precise inclusion and exclusion criteria are considered, there is only need for laboratory tests and imaging in aberrant instances.[1]

Jessie's case is, however, somewhat atypical of a child with growing pains, in that the pain appears to be unilateral and sensitive to touch during episodes. It may be that in her sleepy distress, Jessie only complains of one leg hurting and is generally irritated, hence not allowing the parents to touch it. Careful questioning of the parents may elucidate these points further, but it is important to appreciate the greater likelihood of a more focal lesion with persistent unilateral leg pain and arrange for imaging to clarify this point. In 70% of affected cases, growing pains have been found to affect a parent or sibling, so this point is worth investigating with the family, while maintaining clinical objectivity.

TABLE 2. SUMMARY OF THE ONLY RANDOMISED CONTROLLED TRIAL FOR THE TREATMENT OF GROWING PAINS[4,6]

Number of pain episodes per month	Group 1 – treatment Muscle stretching program*	Group 2 – control Reassurance, leg rubs, acetylsalicyclic acid
	n = 18	n = 16
Beginning of trial	10	10
3 months	1	6
9 months	0	3
18 months	0	2

* Parents were taught a muscle stretching program for quadriceps, hamstrings and gastroc-soleal groups. All stretches were performed twice daily (morning and evening) for 10 minutes each time.

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Although growing pains are prevalent (have been found to affect as many as 35% of children aged four to six years),[2] distressing and familial, they seem to be confined to childhood, abating by the end of the second decade. Restless legs syndrome, although less common, also occurs in children (approximately 1 to 2%) and is being increasingly recognised as another entity that causes not only sleep disturbance, but has wider health associations including behavioural issues, learning difficulties, obesity, mood and general health deficits. The 'cardinal' sign, which may clinically help to distinguish restless legs syndrome from growing pains, is motor restlessness. Children with restless legs syndrome tend to be fidgety (can be confused with ADHD) and have an uncontrollable urge to move their legs (as do adults with this condition).[3]

Management

Maintaining vigilance with respect to the diagnosis by exclusion and slightly atypical presentation as noted, the most likely condition to manage for Jessie and her parents is growing pains.[4,5]

The best available evidence for the management of growing pains comes from a small Canadian randomised controlled trial in children aged 5 to 14 years. This trial supported the efficacy of leg muscle stretching exercises (see Table 2);[4,6] however, the study was biased, with no examiner blinding and small sample sizes.[6] Leg muscle stretching should be the first-line approach by clinicians and can be supplemented with what parents already tend to do – that is, rub their child's legs, apply hot water bottles and give paracetamol when the child is distressed.

Most cases of growing pains will present with episodic spates, a family history, and the inclusion and exclusion criteria of that included in Table 1. It is critical that deviation from these findings be more widely investigated, such that the less frequent but more sinister differentials (e.g. tumours, infections, seronegative conditions) are not missed.

CONCLUSION

In summary, the main points and suggested approach to the management of Jessie are outlined below.

- Leg pain, designated as growing pains, is prevalent in young children and is usually familial.
- The diagnosis of growing pains is made clinically using the inclusion and exclusion criteria.
- The best evidence for the management of growing pains is muscle stretching of the quadriceps, hamstrings and triceps surae groups.
- Clinical presentations deviating from the typically 'benign' growing pains must be further investigated (referral of the patient to a paediatrician or paediatric rheumatologist should be considered).[5,7]

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