

Hands On

Practical advice on management of rheumatic disease



‘GROWING PAINS’ A PRACTICAL GUIDE FOR PRIMARY CARE

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EDITORIAL

Consultations about children in general practice are very common and often include parental concerns about musculoskeletal problems. Many GPs will admit to a low level of expertise in this area and, given that parents are often anxious about their child who is waking at night, distressed and disturbing the whole household, such consultations, not surprisingly, can be stressful.

My aim in commissioning the authors to write about growing pains was to demystify the condition and increase GPs' confidence level when dealing with these challenging patients. I also sought to increase primary care knowledge about serious musculoskeletal conditions such as juvenile idiopathic arthritis (JIA), ensuring that these conditions are not missed.

Louise Warburton

Why is it important that GPs know about growing pains?

5-year-old Anna is brought to see her GP by her mother. For the last 4 weeks Anna has been waking at night complaining of sore legs. Her mother thought this might have been related to her starting school, but she is concerned that the waking at night is still happening 1 month later. She occasionally gives Anna paracetamol and rubs her legs, which usually helps. Recently Anna has started coming into her bed on the nights when the pain is severe. Mum asks her GP if these are growing pains or something more worrying.

This short case illustrates a common scenario in primary care and raises several points to consider:

1. What are the key features in the clinical assessment to establish or refute the diagnosis of growing pains?
2. What other conditions need to be considered?
3. What investigations are required and when should referral be considered?
4. What advice can be given in terms of reassurance and management?

Musculoskeletal (MSK) conditions are one of the most common complaints in children and adolescents,¹ with a broad spectrum of causes including chronic rheumatic disease such as juvenile idiopathic arthritis (JIA) and potentially life-threatening conditions such as malignancy and sepsis (Table 1). Most children with MSK complaints will present initially to their GP and the majority will not need referral to secondary care. However it is vital that children are triaged

and managed appropriately, which relies on careful clinical assessment and judicious use of investigations where indicated. Herein lies the problem. Doctors in primary care report low self-confidence in their paediatric MSK (pMSK) clinical skills² and a need for more teaching in pMSK medicine;³ moreover growing pains has been identified as one of the main areas of need.⁴

TABLE 1. Common/significant causes of musculoskeletal presentations according to age.

<p>Preschool</p> <ul style="list-style-type: none"> • Infection (septic arthritis, osteomyelitis – hip, spine) • Mechanical (trauma and non-accidental injury) • Congenital/developmental problems (e.g. hip dysplasia, talipes) • Neurological disease (e.g. cerebral palsy, hereditary syndromes) • Juvenile idiopathic arthritis • Inflammatory muscle disease • Malignant disease (e.g. leukaemia, neuroblastoma)
<p>Early school-aged (5–10 years)</p> <ul style="list-style-type: none"> • Mechanical (trauma, overuse injuries, sport injuries) • Reactive arthritis/transient synovitis – ‘irritable hip’ • Legg–Calvé–Perthes’ disease • Juvenile idiopathic arthritis • Inflammatory muscle disease • Tarsal coalition • Idiopathic pain syndromes • Malignant disease (e.g. leukaemia)
<p>Adolescence</p> <ul style="list-style-type: none"> • Mechanical (trauma, overuse injuries, sport injuries) • Slipped capital femoral epiphysis • Juvenile idiopathic arthritis • Inflammatory muscle disease • Osteochondritis dissecans • Tarsal coalition • Idiopathic pain syndromes • Malignant disease (e.g. leukaemia, lymphoma, primary bone tumour)

The term ‘growing pains’ is a lay term often used to describe children with non-specific MSK pain and frequently perceived by parents and carers as being indicative of a benign outcome. The term is also used by health care professionals to reassure parents where there is no clear diagnosis, on the premise that, in many cases, MSK pain in children is indeed benign and self-limiting. However, anecdotally there are reports that parents of children with significant disease (such as JIA or muscle disease, or even leukaemia) will recall being told that their child had growing pains at some time before the diagnosis was made. Conversely, many GPs

will refer to secondary care patients whom they often (correctly) consider to have growing pains, but will seek reassurance that serious disease is not being missed and request advice on management. Clearly uncertainty in diagnosis and management are problem areas. This article focuses on enabling GPs to make a confident diagnosis of growing pains, offers practical advice on management, and provides guidance on when to be concerned, what (if any) investigations to arrange and when to refer. In addition we provide an information sheet to give to parents or carers.

What are growing pains?

Growing pains are a clinical entity experienced by many young children with equal gender preponderance, characterised by aches and pains that are poorly localised in the lower limbs (often the calves, shins and around the ankles), and not always localised to the joint.⁵ Parents will report that there is no obvious swelling or bruising, and the pains are often relieved with massage or simple analgesics such as paracetamol or ibuprofen. The name is actually a misnomer as there is no clear association with growth, but the idiom is embedded in medical literature, presumably as no better term has emerged; within paediatric rheumatology the current terminology is ‘benign idiopathic nocturnal limb pains of childhood’(!), which reflects our poor understanding of the aetiology (currently unknown). Irrespective of the terminology, however, the important message is that growing pains are a recognised clinical syndrome with clear parameters for making the diagnosis and guiding management. Undoubtedly growing pains give rise to significant morbidity, causing distress to the child, sleep disturbance and misery often to the whole family owing to their occurrence in the evening and at night.⁵ Parents often present for medical review owing to the night-time disruption to family sleeping and concern that this is the presentation of serious disease.

What are the ‘rules’ of growing pains?

A diagnosis of growing pains can usually be made from the clinical assessment. Given that there is no specific test to confirm the diagnosis positively, it is important to be aware of the ‘rules’ of growing pains (Table 2), and to know that presentations outside these parameters warrant concern. It is important to probe in the history to elicit points for reassurance and alarm which are based on the potential differential diagnoses (Table 1). Key features in the history and physical examination are given in Table 3.

Key features in the history

Characteristically the child with growing pains is well, with no daytime symptoms (other than fatigue after interrupted sleep) and no change in physical abilities or performance in sport, play or school. The pains are predominantly sited in the lower limbs, below the knees, and most commonly in the feet, ankles and calves; *pain in unusual sites* (such as upper limbs or back) is not characteristic. *Limping*, whether intermittent or persistent, is not a feature of growing pains and

TABLE 2. The ‘rules’ of growing pains and when to be concerned.

<p>‘Rules’ of growing pains</p> <ul style="list-style-type: none"> • Pains <i>never</i> present at the start of the day after waking • Child doesn’t limp • Physical activities not limited by symptoms • Pains symmetrical in lower limbs and not limited to joints • Physical examination normal (with the exception of joint hypermobility) • Systemically well • Major motor milestones normal • Age range 3–12 years
<p>Indications for concern</p> <ul style="list-style-type: none"> • Systemic upset <ul style="list-style-type: none"> – <i>red flags</i> to suggest sepsis or malignancy – fever, malaise, anorexia, weight loss, raised inflammatory markers, bone pain, persistent or worsening night pain – Abnormal growth (height and weight) • Abnormal developmental milestones <ul style="list-style-type: none"> – Delay (especially major motor skills) – Regression of achieved motor milestones • Impaired functional ability (ask about play, sport, schoolwork, ‘clumsiness’) • Limping (intermittent or persistent) • Morning symptoms (other than tiredness after disturbed sleep) • Widespread pain (such as upper limbs and back) • School absenteeism

warrants further assessment. *Asymmetrical involvement* is always a cause for concern: growing pains can affect one side more than the other at times, but they must involve both legs symmetrically – persistent unilateral involvement cannot be ascribed to growing pains. It must be remembered that *referred pain* from the hip may present with non-specific pain in the thigh or knee; the differential diagnosis of hip pathology varies with age, with *Legg–Calvé–Perthes’* disease being more common in the young and *slipped capital femoral epiphysis* (SCFE) needing to be excluded in the older child or adolescent. *Systemic features* including ‘red flags’ to suggest malignancy or infection (e.g. fever, malaise, anorexia, weight loss or raised inflammatory markers) warrant urgent referral. *Night waking* is normally and appropriately regarded as a ‘red flag’ that necessitates exclusion of a serious underlying diagnosis (e.g. infection or malignancy). However, night waking is a common feature of growing pains and an understandable cause of anxiety among parents and health care professionals. As a general rule, the pattern of night waking in growing pains is intermittent, and often predictable after periods of activity the preceding day or evening (although this may not be immediately obvious to the parent until this is explored). Conversely, persistent night waking, especially if there are other concerns (such as unilaterality, limping,

unusual location or systemic features), constitutes a ‘red flag’ and necessitates further investigation and referral. It is noteworthy that persistent night waking (typically unilateral, localised and involving the thigh), with pain relieved by non-steroidal anti-inflammatory drugs (NSAIDs), is a characteristic presentation for *osteoid osteoma*, a benign bone tumour presenting in childhood. Any suggestion of *delay in major motor milestones* (Table 4) excludes growing pains as a diagnosis. *Pain on waking or in the daytime*, symptoms suggestive of *stiffness or gelling* (after periods of inactivity), difficulty on stairs or getting out of a bed or chair or off the floor, or even more importantly *regression of achieved milestones* or functional impairment are suggestive of inflammatory joint or muscle disease (such as JIA or juvenile dermatomyositis) and always warrant prompt referral. It is therefore important to enquire about diurnal variation in symptoms and about daily activities – including play, sport and handwriting – both at home and at school. Behavioural problems in the young child may manifest as non-specific pains (headaches, tummy aches or leg pains) and sometimes sensitive questioning can reveal stressful events at home or issues concerning school, including bullying. Additionally, the parent’s reaction to the child’s complaints during the night is important to ascertain – the child being ‘rewarded’ with extra attention from the concerned parent may actually worsen the situation, and dealing with this is an important aspect of management.

Key features in the assessment

The *physical assessment* should include general observation of the child. This starts with watching the child coming into the consulting room, his/her mobility around the room and the interaction with the parent – the well-looking child who is chatty and happily plays with toys is much less likely to have serious underlying disease. It is important to examine the child for pallor, lymph nodes, organomegaly and the pattern of bruising – a normal pattern of bruising (i.e. different size and ages of bruises over the anterior shins) is expected in the healthy active child. When the symptoms have been present for some time, a normal growth pattern and growth rate is an indicator of good general health and the parent-held child record is useful to assess *height and weight (and development)*. Children with growing pains often have features of *hypermobility* which may be generalised or localised to the hands or feet. It is not uncommon to find that children with growing pains have mobile flat feet (Figure 1), although it must be remembered that mobile flat feet are a normal variant in the young child.⁶ It is noteworthy however that not all children with hypermobility complain of pain and conversely not all children with MSK pain or growing pains are hypermobile. **It is important to screen all joints**, as MSK symptoms may be vague, generalised or minimal, even in children with significant rheumatic disease such as JIA. The use of pGALS, a simple, quick MSK screening examination for children (paediatric Gait, Arms, Legs, Spine),⁷ is recommended and further information is available.^{6,8} Although pGALS is validated for use in school-aged children, younger children will often co-operate in completing the

TABLE 3. Key questions to ask and what to look for in the examination.	
HISTORY	CHECK FOR
What have you noticed?	Behaviour, mood, systemic features, joint swelling, limping, bruising
What is the child like in him/herself?	Irritable, grumpy, 'clingy', reluctant to play, systemic features (e.g. fever, anorexia, weight loss)
Where is the pain? (ask the child to point) and what is it like?	Asymmetry, locality and pattern, pain in joints or muscles, involvement of arms, legs or other sites
How is the child in the mornings and during the day?	Diurnal variation and daytime symptoms (e.g. limping; any difficulty walking, getting dressed, toileting, or on stairs)
Has there been any <i>change</i> in the child's activities?	Motor milestones (any suggestion of delay or regression of achieved milestones)
	Avoidance of activities that were previously enjoyed (e.g. sport, play)
How is the child at school?	School attendance (school avoidance, bullying)
	School performance (sport, schoolwork, handwriting)
Does the child wake at night with pain?	Pattern of night waking and any predictability
Can you predict when the pains may occur?	Relationship to physical activity, events at school or home and suggestion of school avoidance
What do you do when the child is in pain?	Response to analgesics; any suggestion of reinforcement of behaviour by parent
What is your main concern?	Sleep disturbance, anxiety about serious disease (arthritis, cancer), pain control
EXAMINATION	
Observe the child in the room	Mood, play, chatter, mum's interaction with the child
Screening examination of all joints	pGALS screen and evidence of hypermobility
General examination	Pallor, bruising, organomegaly, 'unwell', lymphadenopathy
Growth and development	Height, weight and milestones
Ask the child to jump	Evidence of muscle weakness

screen, especially if they copy the examiner and see this as a game. It is also worth asking the child to jump – inability to do so in a child over 4 years of age suggests proximal muscle weakness and further neuromuscular assessment is warranted.

What other conditions need to be considered?

It is important to consider systemic diseases that can manifest with non-specific aches and pains (Table 1). Myalgia, arthralgia and fatigue are features of *anaemia*, thyroid disease (especially *hypothyroidism*) and also *viral infections* and *postviral syndromes*. In the context of failure to thrive, irritability and generalised aches and pains, *osteomalacia* must be considered, especially with a non-Caucasian ethnic background or certain diets (e.g. vegan). *JIA* may present with vague symptoms of aches, rather than joint pain, and swollen joints may be subtle or easily overlooked without localising symptoms – hence the importance of screening all joints (as with the pGALS examination). *Inflammatory*

muscle disease can be indolent and the photosensitive rash of juvenile dermatomyositis can easily be missed. Children presenting with profound, marked functional impairment with no apparent physical cause (sometimes referred to as *idiopathic pain syndromes*) can be differentiated from those with growing pains in that they are usually older children or adolescents, female and markedly debilitated by their pain and fatigue, with accompanying poor sleep pattern and symptoms during the day, and there is often school absenteeism. The pain can be extreme and incapacitating and affect any region (including arms, legs or back), and patients may present to clinic in a wheelchair. The child/adolescent with diffuse idiopathic pain syndrome is otherwise well and physical examination is usually normal – it is noteworthy that the characteristic tender points that are found in adults with fibromyalgia may be absent or fewer in number in children. The aetiology of idiopathic pain syndrome is unknown but affected children often have significant associated stresses in their lives, at home or at school, that may trigger or exacerbate the syndrome (e.g. parental disharmony,



FIGURE 1. Flat feet with normal arches on tip toes.

TABLE 4. Major motor milestones in normal development.

Sit without support	6–8 months
Creep on hands and knees	9–11 months
Cruise when holding on to furniture and standing upright, or bottom shuffle	11–12 months
Walk independently	12–14 months
Climb up stairs on hands and knees	approx. 15 months
Run stiffly	approx. 16 months
Walk down steps (non-reciprocal)	20–24 months
Walk up steps, alternate feet	3 years
Hop on one foot, broad jump	4 years
Skip with alternate feet	5 years
Balance on one foot 20 seconds	6–7 years

family bereavement, bullying or abuse) and may be high achievers (e.g. in sport or academia). Some potential stressors may only be uncovered by interviewing teachers and other family members.

What investigations are required in primary care?

In the majority of cases, with a typical presentation consistent with the ‘rules’ of growing pains and without concerns elicited from the history or from the physical assessment, no further investigations are necessary. Where investigations are required, these are determined by the clinical scenario, with those most helpful listed in Table 5. **If there is clinical concern, however, then referral should not be delayed while arranging investigations in primary care** and referral to general paediatrics, paediatric orthopaedics or rheumatology is appropriate, depending on local referral pathways.

In most cases, a full blood count (with a blood film) and acute-phase reactants will help to exclude anaemia, infection and inflammatory conditions. Biochemistry and vitamin D, thyroid function and muscle enzymes may be indicated, and if in doubt it is worth discussing with hospital colleagues. In the young child with unilateral leg pain and limp, hip pathology must be suspected and it is important to request x-rays of both hips with ‘frog’ views to detect subtle changes which can be masked in standard views. Where the pains are generalised, physical examination unremarkable and basic tests and x-rays unhelpful, then further imaging may be contemplated and will be organised in secondary care. If there is suspicion of JIA or inflammatory muscle disease, prompt referral to paediatric rheumatology is required; this is to optimise outcome and facilitate access to eye screening for *chronic anterior uveitis* (a potentially blinding, often asymptomatic, complication of JIA). Investigations such as auto-antibodies are not needed in primary care as they rarely help diagnosis, and uric acid assay is not necessary.

The management of growing pains

Most cases can be managed in primary care and this should include explanation, reassurance and advice. The list of ‘dos and don’ts’ given in the accompanying information sheet may be helpful for parents and carers and it is very important to give the family clear instructions as to when to seek medical attention again. It is important to stress to families that in the vast majority of cases the symptoms settle with time, with no long-term sequelae, but it is equally important to be realistic and emphasise that the symptoms often fluctuate over several months and sometimes years before settling. There may be a family history of similar pains (e.g. parent and siblings) which disappeared later in childhood and this can be a source of reassurance and comfort to parents. Two Arthritis Research Campaign (**arc**) booklets may be useful: ‘Joint Hypermobility’ (www.arc.org.uk/arthritisinfo/patpubs/6019/6019.asp) and ‘Growing Pains’ (www.arc.org.uk/arthritisinfo/patpubs/6053/6053.asp), which is written for 5–10-year-olds and may be helpful if the child is referred for further investigations.

Parents are sometimes advised to seek orthotics for a child with flat feet and growing pains. We would caution against this approach for all children; undoubtedly there are some children who will require orthotics but, given that the mobile flat foot is a normal finding in children up to the age of 7,⁶ in most cases the prescribing of (often expensive) orthotics

TABLE 5. Investigations that may be indicated in primary care.

- Full blood count (and film)
- Acute phase reactants (erythrocyte sedimentation rate, C-reactive protein)
- Biochemistry (bone biochemistry and vitamin D)
- Thyroid function
- Muscle enzymes
- Growth chart (height and weight)
- X-ray of legs (hips with frog views)

is not required. Our advice is to focus on comfortable, well-fitting footwear such as training shoes, either laced (and the laces tied!) or, for the younger child, Velcro-fastened; many come with medial arch supports. 'Prophylactic' analgesia with paracetamol and/or ibuprofen, before bedtime and especially after busy active days when symptoms may be predicted, can help prevent night waking. During bouts of pain firm massaging may comfort the child, along with further doses of analgesia as necessary. It is important that parents or carers be advised to observe the site of apparent pain and look for physical signs (typically with growing pains there are none), and be encouraged to manage the child without undue attention, to avoid the vicious circle of 'rewarding' the young child with extra parental attention which may exacerbate the symptom complex. Children who are particularly hypermobile or who fail to respond to the above simple approach may benefit from a biomechanical assessment from an experienced paediatric physiotherapist, and exercises and/or orthotics may be advised. It is also important to consider alternative diagnoses and review the child for any change of features not consistent with the 'rules' of growing pains.

Summary

The child presenting with growing pains is a frequent and often distressing clinical scenario in primary care. With careful clinical assessment and knowledge and application of the 'rules' of growing pains, a confident diagnosis can be made in the majority of cases. Those warranting concern – usually the minority – will require investigation and possibly

referral. Management in primary care requires reassurance, explanation and advice on relief (and prevention) of symptoms for the child and on how to minimise disruption to the family. Finally, it is equally important to give clear instructions to the parents or carer, with indications for review, so that significant and potentially serious disease is not overlooked.

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'GROWING PAINS'

ADVICE TO PARENTS AND CARERS

What are growing pains?

- They are common and can be distressing to the whole family.
- They appear to be more common in children who are physically active.
- The cause is not known but children are otherwise completely healthy.
- They do not increase the risk of developing arthritis.
- In most cases no tests are needed to confirm the diagnosis, although sometimes your doctor may request a blood test or an x-ray for your child.
- There is no clear relationship between growing pains and growth problems.
- The term 'growing pains' is a popular, non-technical term but easier to remember than the medical name, 'benign idiopathic nocturnal limb pains of childhood'!
- Most growing pains settle completely with time, although this can take months.

How can I help my child with growing pains?

- Reassure your child that the pains do not mean serious illness but that you understand the pains do really exist.
- Keep a diary of when the pains tend to occur and what sort of activities tend to bring on the pains – do tell your doctor as this may help him/her to suggest ways to help.
- Check that your child's footwear is supportive and well fitting. Trainers are ideal. It is important that shoelaces should be tied and that shoes with Velcro are fastened firmly.
- Many trainers come with arch supports and these may be helpful. Very occasionally, specially made insoles (called orthotics) may be advised, but check with your doctor.
- By keeping a diary you may be able to tell when the pains may happen (e.g. after your child has had a busy day). To prevent pains from starting and to prevent night waking, try giving your child a dose of painkillers (such as paracetamol or ibuprofen) before physical activities or at bedtime. *(Make sure you use sugar-free medicines to look after his or her teeth!)*
- If your child does get pain, try massaging the muscles and joints. You can give more painkillers if necessary (check the packaging for the right dose or, if you are not sure, ask your pharmacist or doctor).

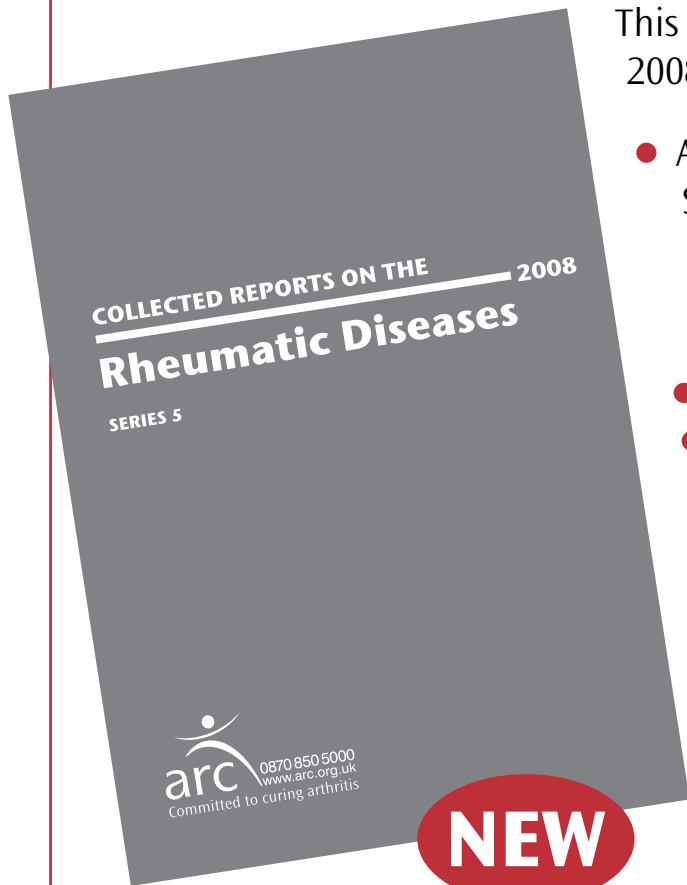
What should I look out for and when should we go back to see the doctor?

If you notice any of the following, make an appointment for the doctor to check your child:

- Joint swelling
- Pains in one leg rather than both
- Pains affecting arms or back rather than just legs
- Fever, loss of appetite or weight loss
- Waking every night with pain
- Reluctance to walk or limping, especially in the mornings
- Reluctance to take part in sports or play because of pains
- Missing school owing to pains.

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