Epidemiology of musculoskeletal pain in primary care

J De Inocencio

PATIENTS AND METHODS

The medical records of all children presenting to a National Health Service (NHS) PPCC located in Madrid, Spain, between 1 January 1997 and 31 December 1999 were reviewed. Inclusion criteria were: (1) age of patients between 3 and 14 years; (2) musculoskeletal evaluation requested because of pain by the family/patient or due to emergency room (ER) follow up; and (3) clinical chart available for review. The age limits were determined by the NHS requirement of transferring patient care to family physicians at age 14 years, and by the low frequency of MSP in children younger than 3 years. The medical records of patients who transferred their care to another PPCC were available from October 1997 to December 1999 due to modification of the chart forwarding procedure, which permitted the PPCC to retain copies of transferred patient’s charts.

Paediatric care in Spain is offered free of charge in clinics located no more than 30 minutes away from family residences. Patient assignment to PPCC is based on their residential geographic location, although parents might choose among paediatricians working in schedules that run from 8 am to 9 pm.

Aims: (1) To determine the proportion of children evaluated for musculoskeletal pain in a paediatric primary care clinic over a three year period; (2) to describe the number of office visits due to musculoskeletal pain; (3) to categorise the more common presenting complaints; and (4) to characterise the aetiology of musculoskeletal pain in a paediatric primary care clinic.

Methods: Retrospective chart review of all children ≥3 and <15 years of age evaluated in an urban paediatric primary care clinic in Madrid between 1 January 1997 and 31 December 1999.

Results: (1) A total of 317 children were evaluated for musculoskeletal pain throughout the study. The prevalence of musculoskeletal pain increased as children grew older, from 2.4–5.7% at age 3 to 27.5–36% at age 14. Regression analysis showed that age (OR 1.20) and gender (OR 0.75) were associated with MSP. (2) Musculoskeletal pain was reported in 397 of 6500 office visits (6.1%; 95% CI 5.5 to 6.7%). (3) Arthralgias and soft tissue pain represented 65% of the presenting musculoskeletal complaints. (4) Trauma was the most common aetiology, responsible for 44% of all musculoskeletal pain related office visits. Mechanical/overuse pathology (23.9%) and osteochondroses (10.3%) represented the second and third leading aetiologies.

Conclusions: Musculoskeletal pain is a common presenting complaint in primary care. The number of children presenting with musculoskeletal pain increases as they grow older, being particularly frequent among the adolescent population. The spectrum of aetiologies is involved, to the extent that three are responsible for almost 80% of cases.
Those findings were corroborated in a multivariate analysis, which did not show any significant interaction between the variables studied (age OR 1.20, 95% CI 1.15 to 1.25; gender OR 0.78, 95% CI 0.60 to 0.99).

Office visits due to MSP

Of a total of 6500 office visits recorded in three years, 397 were due to MSP (6.1%; 95% CI 5.5–6.7%). The number of office visits, MSP related and total, varied each year (106/1778 in 1997, 150/2334 in 1998, and 141/2388 in 1999); differences, however, were not statistically significant. Office visits due to MSP were most frequent in adolescents, to the extent that in children 11–14 years of age MSP was responsible for 11.6±1.5% (206/1780) of all clinic visits. The number of visits due to MSP by groups was: preschool children 35/2145 (1.6%), school aged 117/2169 (5.4%), and adolescents 245/2186 (11.2%).

Characterisation of the presenting complaints

Three presenting complaints, other joint arthralgias, soft tissue pain, and knee arthralgias, represented 65% of all complaints for all ages (table 1). The most prevalent was other joint arthralgias, although the affected joint varied with the age. Diffuse arthralgias were more common in preschool children (4/7 children, 57%) than in school children (2/34, 6%; p < 0.003) or adolescents (0/58; p < 0.0001). The ankle was the most commonly affected joint among the school (15/34, 44%) and adolescent (20/58, 34%) groups. Similarly, involvement of the joints of the fingers increased as children grew (0/7 in the preschool group, 7/34 (20%) in school children, and 17/58 (29%) in adolescents).

Preschool children reported more frequent hip and bony pain than older children, who complained more often of heel and back pain (table 1). Only the proportion of preschool children with hip pain differed from that in school aged children (p = 0.05) and adolescents (p < 0.005). The category ER follow up included fractures (n = 14), sprains (n = 7), osteochondroses (n = 5), and contusions (n = 4). Overall, MSP involved more frequently the lower extremities (51%) than the upper extremities (39%) or axial skeleton (10%).

MSP aetiology

The most common MSP aetiology at all ages was trauma (table 2). Bone/muscle contusion was the most common trauma subgroup. It was more frequent in preschool children (9/11, 82%) than in school patients (17/53, 32%; p < 0.05) or adolescents (25/109, 23%; p < 0.0002). In contrast, fractures were recorded in no preschool children, 6/53 (11%) school children, and 19/109 (17%) adolescents.

Certain aetiologies presented an obvious age related pattern. Non-specific pain, growing pains, toxic synovitis, and hypermobility were much more common in preschool children (table 2). Toxic synovitis was diagnosed in 8/10 before the age of 8 years, and in none after the age of 11 (preschool n adolescents p = 0.002). Similarly, hypermobility was more frequent in preschool children than in adolescents (p = 0.01).

Table 1 Presenting complaints organised by age group

<table>
<thead>
<tr>
<th></th>
<th>Knee arthralgias</th>
<th>Other arthralgias</th>
<th>Soft tissue</th>
<th>Heel pain</th>
<th>Hip pain</th>
<th>Back pain</th>
<th>Bony pain</th>
<th>ER F/U</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preschool n (%)</td>
<td>7 (20)</td>
<td>7 (20)</td>
<td>9 (25.7)</td>
<td>5 (14.3)</td>
<td>1 (2.9)</td>
<td>5 (14.3)</td>
<td>1 (2.9)</td>
<td></td>
</tr>
<tr>
<td>School n (%)</td>
<td>15 (12.8)</td>
<td>34 (29.1)</td>
<td>31 (26.5)</td>
<td>6 (5.1)</td>
<td>5 (4.3)</td>
<td>10 (8.5)</td>
<td>5 (4.3)</td>
<td>11 (9.4)</td>
</tr>
<tr>
<td>Adolescent n (%)</td>
<td>47 (19.2)</td>
<td>58 (23.7)</td>
<td>50 (20.4)</td>
<td>18 (7.3)</td>
<td>4 (1.6)</td>
<td>30 (12.2)</td>
<td>20 (8.2)</td>
<td>18 (7.3)</td>
</tr>
<tr>
<td>Total n (%)</td>
<td>69 (17.4)</td>
<td>99 (24.9)</td>
<td>90 (22.7)</td>
<td>24 (6)</td>
<td>14 (3.5)</td>
<td>41 (10.3)</td>
<td>30 (7.6)</td>
<td>30 (7.6)</td>
</tr>
</tbody>
</table>

Children of 3–5 years of age (n = 35) were pooled in the “preschool” group, children of 6–9 years (n = 117) in the “school” group, and those aged 10–14 years (n = 245) in the “adolescent” group.

ER F/U, emergency room follow up.
Adolescents presented more frequently with mechanical/overuse syndromes than preschool (p = 0.001) or school children (p = 0.02). Osteochondrosis, recorded in 11% of adolescents, was not detected in preschool children (p = 0.03).

The same presenting complaint could be due to different aetiologies. Soft tissue pain was reported with similar frequencies across all age pools (table 1). The leading aetiology, however, was growing pains in preschool children (6/9, 67%), trauma in school children (11/31, 35%), and overuse syndromes in adolescents (33/50, 66%). Knee arthralgias in preschool children were non-specific (4/7, 57%) or associated with hypermobility (2/7, 29%), whereas in school children and adolescents they were most commonly due to patellofemoral pain syndrome (8/15, 53%; and 24/47, 51%), trauma (3/15, 20%; and 10/47, 21%) and Osgood-Schlatter disease (2/15, 13%; and 9/47, 19%). Bone pain in most preschool children was associated with a normal physical examination, while 50% of adolescents with this complaint had fractures.

Three of 397 clinic visits due to MSP (0.8%) were due to inflammatory arthritides. All were recorded in adolescents (3/245 consultations, 1.2%) and were categorised as reactive arthritis.

**DISCUSSION**

This study represents the first comprehensive description of the epidemiology of musculoskeletal pain in children from a primary care perspective. Other series have addressed paediatric MSP with a more restrictive approach, limiting their scope to growing pains,4,5 recurrent limb pain,6 non-specific musculoskeletal pain,7 or pain limited to the lower limbs.8 The setting, a PPCC, provides more realistic figures of all 11–14 year old visits. A similar number, 11.5% of office visits in the USA, being responsible for 9.7% of all 11–14 year old visits. A similar number, 11.5% ± 1.4%, has been obtained in the present series.

Three presenting complaints, arthralgias of the knees, arthralgias of other joints, and soft tissue pain represented two thirds of all complaints. Therefore, the most commonly involved areas are readily accessible and might be easily assessed by paediatricians with adequate training in musculoskeletal examination.

The leading aetiology of MSP at all ages was trauma, whereas other aetiologies showed a preferential distribution according to the age of children. Interestingly, the same complaint did indeed have different causes depending on the age of the child. The prevalence of conditions with idiopathic musculoskeletal pain in the series indicated that the spectrum of aetiologies of MSP in primary care differed from that recorded in tertiary centres.10–12 Similarly, there were no cases of underlying neoplasia13 or chronic arthritis.14

There are significant methodological differences between this study and other series. Some were surveys conducted at paediatric clinics15,16 or schools.17–22 Other studies required from one episode of skeletal pain a week8,9 to two a year5 for inclusion, or excluded patients with MSP due to injury.17,18 This report concerns children who requested an evaluation because of musculoskeletal pain, regardless of its location, duration, aetiology, or accompanying symptoms.

Limitations of this study include its retrospective design. Records of children who transferred to another PPCC before October 1997 were not available for review, which may substantiate the nearly 20% decrease in the number of consultations recorded in 1997. In addition, the study was performed in a single clinic by a single investigator. The setting of the study, an easily accessible free-of-charge NHS practice, may potentially result in an increased number of consultations that may not have taken place in other health organisation environments. Therefore, to what extent the findings reported in this series can be generalised to other practice environments remains to be determined.

**ACKNOWLEDGEMENTS**

I wish to thank Daniel Lovell MD, MPH and Luis Benito MD for their thorough review of the manuscript and helpful comments.

**REFERENCES**


Epidemiology of musculoskeletal pain in primary care

J De Inocencio

Arch Dis Child 2004 89: 431-434
doi: 10.1136/adc.2003.028860

Updated information and services can be found at:
http://adc.bmj.com/content/89/5/431

These include:

References
This article cites 18 articles, 8 of which you can access for free at:
http://adc.bmj.com/content/89/5/431#BIBL

Email alerting service
Receive free email alerts when new articles cite this article. Sign up in the box at the top right corner of the online article.

Topic Collections
Articles on similar topics can be found in the following collections
Child health (3922)
Pain (neurology) (598)
Adolescent health (329)

Notes

To request permissions go to:
http://group.bmj.com/group/rights-licensing/permissions

To order reprints go to:
http://journals.bmj.com/cgi/reprintform

To subscribe to BMJ go to:
http://group.bmj.com/subscribe/