Child's Fever, Limp May Be Septic Arthritis

BY BRUCE JANCIN

EXPERT ANALYSIS FROM A CONFERENCE ON PEDIATRIC INFECTIOUS DISEASES

VAIL, COLO. – Fever and limp that do not resolve within 2-3 days deserve further work-up.

Rather than transient synovitis of the hip, an acute self-limited condition that is the single most common cause of fever accompanied by limp in a child, the cause of the symptoms might be septic arthritis due to *Kingella kingae,* especially in a 1- to 3-year-old child.

However, many of the other disorders in the differential diagnosis of fever plus limp represent medical and surgical emergencies.

These include septic arthritis, osteomyelitis, pyomyositis, and Kawasaki disease, Dr. Samuel R. Dominguez said at the conference, which was sponsored by the Children's Hospital, Denver.

Another possible diagnosis is pyomyositis, noted Dr. Dominguez, a pediatric infectious diseases specialist at the hospital and the University of Colorado at Denver.

Transient Synovitis

The typical age of onset is 3-8 years, boys are affected twice as often as girls, and the etiology is unknown. Because transient synovitis – sometimes called reactive arthritis – is a diagnosis of exclusion and there is considerable symptomatic overlap with septic arthritis, management algorithms call for watchful waiting in a child who has only a low-grade fever, can walk, and doesn't seem too systemically ill.

If there is no improvement in the first 2-3 days, however, it's worthwhile to order measurement of inflammatory markers. A C-reactive protein (CRP) level of 1.2 mg/dL or greater and/or an erythrocyte sedimentation rate (ESR) of at least 30 mm/hr warrants further work-up, including hip ultrasound and aspiration, in order to exclude joint or bone infection, Dr. Dominguez said.

K. kingae in Septic Arthritis

The causative organisms in septic arthritis vary with age. Although *Staphylococcus aureus* is the most common organism, a French study of 131 children admitted with a joint or bone infection showed that *K. kingae* was by far the most common etiologic agent in the 1- to 2-year-old age group. Many of these youngsters were culture negative but polymerase chain reaction positive for *Kingella* (Pediatr. Infect. Dis. J. 2007;26:377-81).

The take-home message is to consider the possibility of *Kingella* as a cause of joint or bone infection in 1- to 2-year-olds, and to cover for that with penicillins or cephalosporins, Dr. Dominguez said.

Israeli physicians conducted a retrospective national survey of all clinical microbiologic laboratories in their country, and turned up 322 pediatric *K. kingae* infections, more than half of which were skeletal.

Overall, 96% of affected children were younger than age 3 years. Most appeared to be only mildly ill. Nearly a quarter had no fever, a third had a nonelevated ESR, and 22% had a normal CRP (Pediatr. Infect. Dis. J. 2010;29:639-43).

Pyomyositis

The annual case count more than doubled during 2000-2006 at Texas Children's Hospital in Houston. The hospital's report is the largest series of bacterial myositis in previously healthy children ever reported from a nontropical region (Clin. Infect. Dis. 2006;43:953-60). The mean ESR was 62 mm/hr, the mean CRP was 16.3 mg/dL, and creatinine kinase levels were normal in all patients.

Pyomyositis is associated with a remarkable degree of pain, and hospital stays for these patients are often longer than with other musculoskeletal infections. Antibiotic therapy typically lasts for 3-4 weeks, including close to 2 weeks of IV therapy. Surgical drainage is often required. MRI is the diagnostic imaging of choice. The surging incidence of pyomyositis since 2000 is thought to be due to the rise of methicillin-resistant *S. aureus*.

Kawasaki Disease

In a series of 198 children with Kawasaki disease reported by the Pediatric Heart Network investigators, 15% had joint pain during the 10 days prior to diagnosis (J. Pediatr. 2009;154:592-5). ■

Disclosures: Dr. Dominguez said he has no relevant disclosures.

Lung Function Often Impaired in Juvenile Dermatomyositis

BY DIANA MAHONEY

FROM THE ANNALS OF THE RHEUMATIC DISEASES

Juvenile dermatomyositis is associated with reduced lung volumes, restrictive ventilatory defects, and evidence of pulmonary abnormalities on high-resolution CT, a study has shown.

The pulmonary complications – even in the absence of lung symptoms – correlated with cumulative organ damage and patient-reported health status, which demonstrates the clinical relevance of the findings and the systemic nature of the chronic vasculopathic disease, reported Dr. Helga Sanner of the division of rheumatology at the University of Oslo and her associates.

Because of the scarcity of data on pulmonary involvement in juvenile dermatomyositis, Dr. Sanner and colleagues designed a case-control study to compare lung function in a cohort of patients with juvenile dermatomyositis (JDM) vs. matched controls. The investigators also determined the prevalence of and correlation between pulmonary function impairments and abnormalities on high-resolution computed tomography (HRCT).

The investigators enrolled 59 patients whose JDM was diagnosed between January 1970 and June 2006 (identified from a retrospective inception cohort) and 59 age- and sex-matched controls.

Both the JDM patients and the controls underwent clinical examination by a single doctor, including pulmonary function testing (measurement of gas diffusion and body plethysmography) and assessment of blood samples.

The JDM patients also underwent HRCT, anti–nuclear antibody analysis, measurement of disease activity using the Disease Activity Score (DAS) for JDM, assessment of cumulative organ damage using the Myositis Damage Index (MDI), measurement of physical health using the Short Form-36 physical component summary (PCS), and measurement of physical function using the Health Assessment Questionnaire (HAQ) for patients aged 18 years and older and the Child HAQ for patients younger than 18 years.

With respect to clinical lung involvement, three of the JDM patients had been diagnosed with interstitial lung disease (ILD) prior to the clinical examination; 6 months after her JDM diagnosis, one of the JDM patients developed mediastinal emphysema without evidence of ILD at the age of 15 years, the authors wrote, noting that none of the controls had lung symptoms.

Compared with the controls, the JDM patients had significantly lower total lung capacity (TLC), diffusion lung capacity of carbon monoxide (DLCO), forced vital capacity (FVC), and the forced expiratory volume in 1 second (FEV_1). Approximately 26% of the JDM patients, compared with 9% of the controls, had a low TLC; 49% of the JDM patients, compared with 8% of the controls, had a low DLCO (defined for both measures as less than the fifth percentile of the predicted values), the authors reported (Ann Rheum Dis. 2010 Aug. 30 [doi:10.1136/ard.2010.131433]).

VITALS

Major Finding: Pulmonary involvement is common in patients with juvenile dermatomyositis and is associated with cumulative organ damage and patient-reported health status.

Data Source: Case-control study comprising a retrospective inception cohort of 59 Norwegian patients diagnosed with JDM, and healthy controls.

Disclosures: The authors reported having no financial conflicts of interest. The project received financial support from the Dr. Olga Imerslunds Foundation, Oslo.

With respect to HRCT findings in the JDM patients, 37% had evidence of pulmonary abnormalities, including changes compatible with interstitial lung disease (14%), airway disease (15%), pleural thickening (5%), and calcinosis in the chest wall (14%), the authors reported.

The correlation analyses showed that 50% of patients with an abnormal HRCT abnormality had a low TLC, compared with 12% of patients with normal HRCT findings, and 57% of patients with HRCT-detected calcinosis in muscle and/or fascia had a low TLC, compared with 22% of patients without that finding. The TLC percentage of predicted correlated with HRCT-detected airway disease, whereas the DLCO percentage of predicted did not correlate with any HRCT variables.

"The association between chest wall calcinosis and restriction is not surprising, since calcium deposits might lead to respiratory muscle impairment, however the association between a low TLC and airway disease [for example, bronchiectasis] is more difficult to explain," the authors wrote, noting the possibility of a type I error.

HRCT abnormalities also correlated with cumulative organ damage and poorer patient-reported health status as measured by total MDI, HAQ/child-HAQ, and SF-36 PCS, and a borderline association was found between HRCT-detected ILD and dyspnea on exertion. "Taken together, we believe this supports the clinical relevance of our findings," the authors wrote.

Even though approximately 75% of the patients had impaired diffusion, restriction, or HRCT abnormality at follow-up, most of the patients did not report lung symptoms. It's possible "that the lung symptoms may have been masked by restricted functions in other organ systems," the authors speculated. For example, "if patients are not able to complete physical exercise due to muscle weakness, they will not experience shortness of breath even when they have reduced lung function," they stated.

Follow-up studies are needed to investigate whether more patients with detectable HRCT abnormalities and pulmonary function test impairments will develop clinically manifest pulmonary disease in the future, they stressed.

The findings are limited by the study's retrospective assessment of early disease variables and by the lack of longitudinal data on the outcome measures, according to the authors. Because symptomatic ILD can develop in the chronic phases of the disease, they wrote, "some of our latest diagnosed patients may still develop ILD." The study is also limited by the retrospective assessment of early disease variables. ■