Watch Out for Animal Bites

LDH Levels May Help to Determine Bronchiolitis Severity

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Major Finding: A nasal wash lactate dehydrogenase level reaching 365 U/mL or higher in children with bronchiolitis was associated with a significant 81% reduction in the need for hospital admission.

Data Source: A retrospective analysis of prospectively collected nasal wash samples from 98 children with bronchiolitis.

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T he concentration of lactate dehydrogenase in nasal wash may be a useful clinical biochemical marker of the severity of bronchiolitis in children and help to determine their need for hospitalization, the results of a retrospective analysis suggest.

Dr. Federico R. Laham and his colleagues at Baylor College of Medicine, Houston, found that bronchiolitic children with low lactate dehydrogenase (LDH) levels in their nasal wash were significantly more likely to be admitted to the hospital than those with high LDH levels.

"Currently the presence of hypoxia, significant respiratory distress, and clinical judgment are the main consideration[s] for determining the need to hospitalize a child with bronchiolitis. Having a validated biochemical marker predictive for hospitalization can provide another objective parameter to the physician, and would be valuable in difficult-to-assess cases," Dr. Laham and his colleagues wrote (Pediatrics 2010;125:225-33).

The study represents the first known analysis of lactate dehydrogenase levels in nasal wash, according to the investigators. They identified viruses, tested for cytokines and chemokines, and measured levels of apoptosis and LDH in nasal wash specimens from 98 children who had participated in an earlier study of bronchiolitis. They also measured serum LDH levels. These 98 patients had a median age of 5.6 months and a median duration of illness of 4 days at the time of their presentation to the ED.

Respiratory syncytial virus (RSV) was identified in 65 (66%) patients, including 15 infected with RSV and another virus. Although detection of a virus alone was associated with a higher concentration of LDH in nasal wash, children with RSV infection in particular had a significantly greater LDH level in nasal wash than did children not infected with RSV.

A higher nasal wash to serum LDH ratio in children sent home from the ED, compared with those admitted to the hospital, supports the hypothesis that "LDH originates from devitalized tissue—especially crush injuries, puncture wounds, and bites to the face, hands or feet, or geni-
tals—have a greater risk of complications, including infections." For the child with an overtly infected wound, treatment is 10 days (and in those with wounds involving tendons, joints, or other deeper tissues, intravenous therapy should be utilized). The most common infecting organism with both dog and cat bites has always been Pasteurella multocida, but Staphylococcus aureus, Eikenella corrodens, Capnocytophaga species, some anaerobes, and some gram-negative organisms have been reported.

It is interesting to note that among infec-
ted wounds at our hospital, we found no methicillin-resistant Staphylococcus aureus despite that 70% of the children we see with skin abscesses (and we see a lot) are caused by this pathogen. For now, we are still recommending amoxicillin-clavu-
lanate, but of course, culture the draining wound and carefully follow up. For those with true penicillin allergy, the combina-
tion of clindamycin plus trimethoprim-
sulfamethoxazole can be used for non-
reptile animal and human bites.

Stay tuned and enjoy the springtime weather and all of the fun it brings with it.

Dr. Jackson is chief of pediatric infectious diseases at Children's Mercy Hospital, Kansas City, Mo., and professor of pediatrics at the University of Missouri-Kansas City. Dr. Jackson said she had no relevant financial disclosures to make. E-mail her at pdnews@elevier.com.

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No significant predictors of hospi-
talization among children with bronchiolitis who presented to the ED. However, a nasal wash LDH level reaching 365 U/mL or higher was associated with a significant 81% reduction in the need for admission.

In the same prediction mod-
el, the investigators calculated an area under the receiver operating characteristic curve of 0.87. Based on that area and a cutoff value of 0.5 for the pre-
dicted probability of hospital-
ization, the model predicted hospitalization with 81% sensi-
tivity and 77% specificity.

Support for this concept is comparable to many of the point-of-care tests used in diagnosing a viral infec-
tion. The LDH assay is easy to perform, inexpensive, and avail-
able in most clinical laboratories. At our institution, the expected turnaround time for serum LDH is 1 hour, and [nasal wash] samples should not be treated differently," Dr. Laham and his associates wrote.