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Pasteurella Multocida Meningitis in a Seven-Week-Old Infant

ABSTRACT & COMMENTARY

Synopsis: *A seven-week-old infant developed purulent Pasteurella multocida meningitis that was originally thought to be caused by Haemophilus influenzae type b. The infection was believed to be transmitted by the fingers of a sibling that had been licked by a pet dog in the home.*

Source: Wade T, et al. *Pasteurella multocida* meningitis in infancy - (a lick may be as bad as a bite). *Eur J Pediatr* 1999;158:875-878.

Pasteurella multocida, a gram-negative coccobacillus, is the most common agent cause of local infections after a dog or cat bite. Approximately 70-90% of cats and 55% of dogs have this organism in their mouths. Meningitis caused by this organism is unusual, particularly in infants younger than 12 months of age, and a total of only 23 cases were reported in the literature between 1963 and 1996. Wade and associates from St. Mary's College in London describe a seven-week-old infant who presented with fever, irritability, and a bulging fontanelle. Lumbar puncture revealed purulent cerebrospinal fluid (CSF) that contained gram-negative rods. CSF rapid antigen screen was positive for *Haemophilus influenzae* type b. Blood culture was also reported to be positive for *H. influenzae* type b. The child was treated with cefotaxime and, after a stormy course, recovered but was left with neurological sequelae.

Since 1995 any *H. influenzae* organism that is recovered from the blood or CSF in the United Kingdom is sent to a reference lab in Oxford for validation. Extensive testing showed that the organism was *P. multocida*, not *H. influenzae*.

The family of this child owned two dogs and one cat but there was no direct contact between the infant and a pet (no history of licking or of a bite or scratch). Later questioning revealed that a 2-year-old brother whose hands were often licked by the dogs had been seen trying to comfort the infant by letting the baby suck on his fingers.

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COMMENT BY ROBERT BALTIMORE, MD, FAAP

Wade et al note that of the 23 cases of *P. multocida* meningitis in infants that have been reported, 12 of the infants had exposure to dogs, eight cases had exposure to cats (3 were exposed to both), three cases had no animal contact information, and in only two cases did the parents specifically deny the possibility of any animal contact. In only two cases was there a history of a bite or scratch; in the other 15 there was only possible salivary contact. The probable mechanism for these infections in the absence of a bite or scratch may be that the pet licks the hands of a family member who then transmits the organism to the baby's mouth, who, in turn, may develop pharyngeal colonization followed by invasion and hematogenous spread to the meninges.

P. multocida meningitis or sepsis is frequently misdiagnosed as *H. influenzae* or *Neisseria meningitidis* by microscopy or culture, but definitive identification can be made on the basis of characteristic fermentation patterns. The reason for the false-positive rapid antigen screen test in this case is not clear.

The widespread use of HiB vaccine has virtually eliminated infections with *H. influenzae* type b in the United States and the United Kingdom, and the occurrence of a case of invasive infection apparently caused by this organism should raise suspicion that something else may be going on.

This case and the others reported in the literature emphasize that there is a risk of having pets in households where there are infants. Nearly all of these cases are preventable by reminding parents in these homes that young infants should not come in close contact with the saliva of dogs and cats, and the rest of the family should be assiduous about hand washing, especially if they might put their fingers in the baby's mouth.

A final point concerning *P. multocida* in older people. The organism can be responsible for severe and even fatal invasive infections in immunocompromised and asplenic individuals.[1] ❖

Reference

1. Mellor DJ, et al. Man's best friend: Life threatening sepsis after minor dog bite. *BMJ* 1997;314:129-130.

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Continuous Subcutaneous Insulin Infusion—A Better Way to Manage Type 1 Diabetes in Adolescents

ABSTRACT & COMMENTARY

Synopsis: *Continuous subcutaneous insulin infusion (CSII) is an effective way to control diabetes mellitus in adolescents with type 1 diabetes. When compared to multiple daily insulin injection (MDI), children treated with CSII for 12 months had lower levels of HbA1c, a lower risk of hypoglycemia, and enhanced coping skills.*

Source: Boland EA, et al. Continuous subcutaneous insulin infusion. A new way to lower risk of severe hypoglycemia, improve metabolic control, and enhance coping in adolescents with type 1 diabetes. *Diabetes Care* 1999;22:1779-1784.

A group of 75 children, 12-20 years of age, with insulin-dependent diabetes mellitus type 1, were given the option of CSII vs. MDI treatment. Fifty children chose MDI, 24 chose CSII. Routine visits with advance practice nurse practitioners were conducted every 4-6 weeks and these included diabetes education. Patients were taught carbohydrate counting by a registered dietician and were instructed how to vary their insulin doses based upon food intake and planned exercise. Psychosocial evaluations were performed using Diabetes Quality of Life Youth questionnaires, which

assess life satisfaction, disease impact, and disease-related worries. Data concerning episodes of hypoglycemia and ketoacidosis were also collected at each visit.

In both groups, mean HbA1c levels decreased significantly during the first six months of treatment. Between six and 12 months, HbA1c levels increased in the MDI but not in the CSII group and were statistically lower in the CSII group (7.5 ± 0.9 vs 8.1 ± 1.0; $P = 0.02$).

Rates of hypoglycemia requiring assistance or resulting in coma were reduced by nearly 50% in the CSII group compared to the MDI group. There were no differences between the groups of episodes of diabetic ketoacidosis. Both groups had comparable improvement in psychosocial assessments of quality of life, depression, and self-efficacy. However, the adolescents using CSII found coping with diabetes to be less difficult than those using MDI.

COMMENT BY MYRON GENEL, MD, FAAP

The past few decades have seen a dramatic shift in the philosophy of management of type 1 or insulin-dependent diabetes in children and adolescents. Improved technology, in particular the development of blood glucose monitoring techniques as well as new preparations of insulin, accounts for this in part. More important, however, is recognition among pediatricians that there is a direct correlation between diabetes control and prevention of the long-term catastrophic complications of diabetes. Most of these complications (kidney, retina, etc.) usually occur outside the pediatric age group when the patient's care has been assumed by adult practitioners and specialists. Near-normalization of blood glucose profiles that could be achieved when "insulin pump therapy" or, more accurately, continuous subcutaneous insulin infusion (CSII) was introduced 20 years ago—as well as by multiple daily injections. The initial devices for CSII were cumbersome and cosmetically unattractive. This has changed significantly in the past few years with miniaturization—not to mention the publicity that came with the selection of the 1998 Miss America, Nicole Johnson, who manages her diabetes with a small pump.

A risk of intensive insulin therapy with either the pump or multiple injections is hypoglycemia. Adolescents are particularly susceptible, in part because the relative insulin resistance of puberty necessitates the use of higher doses and the pharmacodynamics of regular insulin are such that post-prandial hypoglycemia may result. Blunting of the normal compensatory catecholamine response to hypoglycemia further increases this risk.

In more than one year of observation, Boland and associates at Yale were able to achieve better control, as reflected in lower hemoglobin A1c levels in adolescents using the pump compared to patients on multiple daily injections, while at the same time observing an almost 50% reduction in severe hypoglycemic episodes. Nevertheless, the number of hypoglycemia episodes continues to be a problem. Hopefully, substitution of newer and more rapidly acting insulins such as Lispro will enable more effective control while also reducing the risk of hypoglycemia.

As noted in an editorial by Wolfsdorf,[1] the type of education, self-management, training, professional support, and monitoring described in the Boland study requires supervision by expert multidisciplinary teams in regional centers of excellence. ❖

Reference

1. Wolfsdorf JI. Improving diabetes control. *Diabetes Care* 1999;22:1767-1768.

Predictors of Malignancy in Lymphadenopathy—To Biopsy or Not to Biopsy?

ABSTRACT & COMMENTARY

Synopsis: *The risk of finding malignancy in an enlarged lymph node increased with increasing size and number of sites of adenopathy and increasing age. Other significant predictors of malignancy were a supraclavicular location, an abnormal chest X-ray, and fixed nodes.*

Source: Soldes OS, et al. Predictors of malignancy in childhood peripheral lymphadenopathy. *J Pediatr Surg* 1999;34: 1447-1452.

Soldes and associates from the c.s. mott children's Hospital in Ann Arbor reviewed the medical records of 60 consecutive patients younger than 18 years of age who underwent surgical procedures for peripheral lymphadenopathy between January 1991 and December 1993. Data concerning physical findings, history of illness, laboratory and radiological evaluation, and pathological diagnosis were abstracted from the records. Information included the anatomic location; the size in centimeters; the presence of fever, cough, tenderness, and skin involvement; and whether the node was fixed to surrounding tissue or fluctuant. Historical information included the duration of lymphadenopathy, a history of malignancy or immunodeficiency, recent antibiotic therapy, and exposure to animals or to tuberculosis. Labora-

tory and radiological studies done before the surgical intervention were noted. Multivariate logistic analysis was applied to determine the significant risk factors predicting malignancy in these children with lymphadenopathy.

Malignant lymphadenopathy, chiefly Hodgkin's disease and lymphoma, was diagnosed in 16 patients (27%); 44 (73%) of the nodes were benign. Of the benign nodes, 16 (27%) had an infectious etiology, chiefly streptococcal and staphylococcal abscesses. Nearly half of the infectious lymph nodes were fluctuant and fluctuance was associated with benignity. Four children had *Mycobacterium avium* intracellulare lymphadenopathy. We used to call these "atypical acidfast" lymphadenopathies. Twenty-one lymph nodes (35%) were defined as "probably infectious," showing reactive hyperplasia or granulomatous inflammation and negative cultures.

Factors associated with a relatively high risk of malignancy were supraclavicular location, an abnormal chest X-ray, and fixed lymph nodes. Variables such as duration of lymphadenopathy, fever, cough splenomegaly, and tenderness did not help differentiate benign from malignant nodes.

COMMENT BY HOWARD A. PEARSON, MD, FAAP

An enlarged lymph node, particularly one that is visible and persistent, often evokes a great deal of anxiety about the possibility of malignancy. For years we have been wary of nodes in certain anatomic locations, such as supraclavicular and posterior cervical regions. We are also concerned if the nodes are hard, nontender, or fixed to surrounding tissues. The study by Soldes et al attempts to develop a multivariate scoring system to help decide whether a specific enlarged lymph node warrants biopsy. It also supports previous studies that most of these enlarged nodes are not malignant. Factors increasing the possibility of malignancy include older age, larger size, and multiple sites (although not bilateral, symmetrical nodes such as bilateral anterior cervicle nodes). Two of their statistically significant factors for malignancy were a supraclavicular location and an abnormal chest roentgenogram. These are probably related because of the continuity of supraclavicular lymph nodes with the anterior mediastinum—the usual location of Hodgkin's disease and other lymphomas. It is also fairly obvious that new lymphadenopathy in a child with a history of malignancy requires prompt definition, not only because a significant risk of recurrence but also because of the usual family anxiety. Soldes et al's list of characteristics of probably benign lymphadenopathy includes especially fluctuance. Several factors were not found to be useful in differentiating benign vs. malignant lymph nodes, including duration of the lymphadenopathy, presurgical antibiotic use, fever, cough, splenomegaly, node tenderness, or skin involvement (erythema, induration).

Soldes et al conclude that older children (> 8 years of age) with an enlarged lymph node of supraclavicular location and/or those who have an abnormal chest X-ray should undergo prompt biopsy. In contrast, younger children with a small single node in one location have a low risk of malignancy and may be managed by further testing including tuberculin skin test, chest X-rays, and consideration of a course of antibiotics. ❖

The Natural History of Ventricular Septal Defects

ABSTRACT & COMMENTARY

Synopsis: *Ventricular septal defects (VSDs) are relatively common and are perimembranous, muscular, or rarely doubly committed in location. Muscular defects account for about 60% of VSDs. These defects are often small, have few hemodynamic abnormalities, and often close spontaneously. Perimembranous VSDs are often associated with hemodynamic abnormalities. They are less likely to spontaneously close and so often require surgery.*

Source: Turner SW, et al. The natural history of ventricular septal defects. *Arch Dis Child* 1999;81:413-416.

Turner and associates set out to investigate the incidence and natural history of clinically detectable ventricular septal defects (VSDs) and designed a longitudinal, population-based cohort study with a mean follow-up of 76 months. Entry into the study was based upon clinical suspicion or recognition of VSD rather than routine echocardiography without signs or symptoms.

VSDs can be classified based on their size and their location. Turner et al used a standard classification system whereby VSDs were described as being perimembranous, muscular, or doubly committed. The latter refers to a group of VSDs seen primarily in Asian populations, where the defect is located directly beneath the aortic and pulmonary valves. This type of VSD accounts for less than 5% of the VSDs seen in North American children. Echocardiography was used to verify the presence of the defect, to locate its position in

the septum and to determine its size. Small defects were defined as those VSDs that were seen only during part of the cardiac cycle in two-dimensional imaging or those that were only seen with the use of color Doppler mapping.

The study was carried out in the northern United Kingdom, where there is a stable population of about 3.1 million people. Virtually all pediatric cardiology patients in this part of the United Kingdom are referred to a centralized pediatric cardiology service. Local GPs were asked to immediately refer all infants and children in whom a VSD was known or suspected.

Closure of the VSD was determined to have occurred under three situations: 1) surgical intervention; 2) on follow-up, neither two-dimensional echocardiography or color Doppler could identify a persistent defect; 3) there was no murmur of VSD at follow-up.

Muscular defects comprised nearly 60% of all VSDs and perimembranous defects accounted for about 40%. No doubly committed defects were seen among the total of 68 VSDs. A perimembranous defect is more likely to be hemodynamically significant than a muscular defect and so more often requires surgery (39% vs 3%). Moreover, perimembranous defects are less likely to undergo spontaneous resolution when compared to muscular defects (29% vs 69%). It is important to note that almost 11% of the perimembranous VSDs that were not large ultimately required surgical closure because of associated aortic valve prolapse or right ventricular outflow obstruction, two known complicating features of perimembranous VSDs.

COMMENT BY ALAN FRIEDMAN, MD, FAAP

It has long been known that VSDs are the most common of the congenital heart defects when the bicuspid aortic valve is excluded. In fact, with the introduction of highly sensitive color Doppler mapping imaging techniques, the incidence of VSD in the newborn population has been reported to be between 2-4.2%. A good number of these defects are small and undergo spontaneous closure over time, and, therefore, require no intervention or therapy. The results of this study by and large corroborate our clinical experience as pediatricians: muscular defects tend to be small and usually get smaller, remaining hemodynamically insignificant or spontaneously close; perimembranous defects are less likely to close and are more likely to require surgical intervention. This latter finding may result from the defect's size and the concomitant volume load with or without a pressure load on the pulmonary vasculature, or closure may be indicated because of the development of associated problems such as aortic valve prolapse.

This study also confirms the fact that VSDs are common. In this study, isolated VSDs were found to occur in 1.76/1000 live births. This incidence is lower than in studies that use echocardiography with color Doppler mapping instead of auscultation as an entry criterion because color Doppler will undoubtedly recognize "tiny," clinically inaudible muscular VSDs, which have a high rate of closure in the first year of life.

We as pediatricians should recognize that VSDs are common in our patients and when they are present in the muscular part of the septum, they have a high rate of spontaneous closure, usually before the age of 6 years, and a low incidence of hemodynamic alteration. In contrast, perimembranous VSDs tend to be larger and are more likely to lead to clinically relevant hemodynamic abnormalities. Perimembranous VSDs require more diligent long-term follow-up, as there may be the development of associated aortic valve disease. ❖

To Spank or Not to Spank

ABSTRACT & COMMENTARY

Synopsis: *About 80% of adults report that they were spanked as a form of punishment during childhood. There was a significantly higher prevalence of psychiatric and behavioral problems in adults who had been spanked as children compared to those who had not.*

Source: MacMillan HL, et al. Slapping and spanking in childhood and its association with lifetime prevalence of psychiatric disorders in a general population sample. *CMAJ* 1999;161:805-809.

Whether to spank or not to spank children as a form of punishment in the home (and, in some parts of the country, in the school) is one of those controversial child-rearing issues about which every clinician has a strong opinion. Often this opinion is based on personal experiences—how one was raised and how one is raising (or has raised) children—as opposed to the results of scientific studies. MacMillan and colleagues used a population-based study in Ontario, Canada, to examine how often adults report that they were spanked or slapped during childhood and to determine possible relationships of this history to psychiatric disorders. Similar findings have been reported from the United States.

Data for this study came from the 1990-1991 Ontario Health Supplement, a survey of 9953 residents who were at least 15 years of age. All were asked about slapping or spanking: "When you were growing up, how

often did any adult slap or spank you? Often? Sometimes? Rarely? Never?" To examine the association of spanking per se with psychiatric disorders, the following respondents were excluded: those older than 64 years of age, those who reported a history of physical abuse and/or sexual abuse, and those with missing information. A total of 4888 people were included in this part of the study. Psychiatric disorders were ascertained by a structured interview.

The majority of respondents (80%) reported that they had been slapped and/or spanked during childhood: often, 5.5%; sometimes, 33.4%; or rarely, 40.9%. The remaining respondents (20.2%) reported never being slapped or spanked. Females reported never being slapped or spanked more frequently than males (23.9% vs 16.4%). Because of the wording of the question, it is unclear whether the spanking or slapping was by a parent or another adult.

There was a statistically significant association between the reported frequency of being slapped or spanked and anxiety, alcohol abuse or dependence, and externalizing problems such as antisocial behaviors or illicit drug abuse or dependence. An association also was noted for major depression, but the p value was 0.08.

COMMENT BY JOHN M. LEVENTHAL, MD, FAAP

Here is yet another study demonstrating that physical punishment is prevalent in North America and is associated with long-term adverse outcomes in three of the four psychiatric disorders examined. A major strength of this study is the exclusion of adults who reported sexual abuse and/or physical abuse (24% of the sample) because these childhood experiences, by themselves, have been associated with psychiatric disorders. A major limitation of this study is a failure to control for other important variables in the family, such as an alcoholic parent, domestic violence, parental divorce, etc.

It is clear both from this study and others that investigations on the long-term (or even short-term) consequences of spanking are methodologically difficult to conduct. Of course, the perfect study—a randomized, controlled trial of spanking—is not ethically possible, so we are left with observational studies and their potential biases. In such studies, the most important bias is the failure to control for critical family variables that are likely to be associated with the occurrence of the outcome. A second important potential bias relates to people's memories about how they were raised. For instance, in MacMillan et al's study, if respondents with alcohol-related problems overreported the frequency of slapping or spanking, then these falsely inflated frequencies would result in a false association with the outcome of alcohol abuse or dependence.

For those who believe that spanking is not good for children, the results of this study will provide further support; for those who favor physical punishment, the limitations of the study will be noted. It is hard to imagine a study design that would convince those at the extremes. Keep in mind, however, when studies examining the short- or long-term consequences of physical punishment do find an effect, it is usually a negative effect. No studies have ever suggested that physical punishment is good for children. ❖

Brief Report

Adenotonsillectomy is Ineffective in Preventing Recurrent Acute Otitis Media

Source: Paradise JL, et al. Adenoidectomy and adenotonsillectomy for recurrent acute otitis media: Parallel randomized clinical trials in children not previously treated with tympanostomy tubes. *JAMA* 1999;282:945-953.

Adenoidectomy and adenotonsillectomy are frequently performed in the United States in an attempt to reduce the occurrence of persistent or recurrent otitis media. Paradise and associates at the Children's Hospital of Pittsburgh, who have conducted some of the most important and definitive studies on otitis media in children, conducted a prospective, randomized study to assess the efficacy of adenoidectomy or adenotonsillectomy in preventing otitis media. Children 3-15 years of age who had not undergone tympanostomy tube placement, who had experienced at least three episodes of acute documented otitis media in the preceding six months, or at least four episodes in the preceding six months were eligible for inclusion in the study. Four hundred sixty-one children were stratified into three age categories (3, 4-6, and 7-15 years of age) and further classified if adenoidal nasal obstruction was present. Two studies were conducted in these children. In trial one—a three-way study—394 children without tonsil-related indications for tonsillectomy were assigned to receive adenoidectomy, tonsillectomy and adenoidectomy (T&A), or be a control group without surgery.

The second parallel two-way study enrolled assigned 157 children whose tonsils appeared to be potentially obstructing or who had a history of recurrent sore throats to an adenotonsillectomy or a control

group. Four hundred ten subjects were followed in the two trials (86% for 1 year, 75% for 2 years, and 61% for 3 years). Children were seen regularly and episodes of otitis media were evaluated by study personnel. The primary outcome measure was the number of acute episodes of otitis media. All episodes of otitis media were treated with conventional doses of antibiotics—chiefly amoxicillin.

The efficacy of surgery in both trial groups was modest and limited mainly to the first year after surgery. The largest difference was seen in the three-way study, where the rate of otitis media was 1.4 in the adenotonsillectomy group compared to 2.1 in the control group. There was no decrease in the number of subsequent polyethylene (PE) tube placements. Peri- and post-operative complications occurred in 14.6% of children who had adenotonsillectomy.

Paradise et al conclude that there is only a limited and short-term effect of both adenectomy and adenotonsillectomy in reducing the incidence of acute otitis media in children. Given the risks, morbidity, and costs of these surgical procedures, neither operation should be considered as a first surgical intervention in children whose only indication is recurrent otitis media. (*This Brief Report was written by David E. Karas, MD, Head of Pediatric Otolaryngology at Yale University School of Medicine, New Haven, CT.)*

Special Report

Childhood Enuresis Association

By Thomas L. Kennedy, MD, FAAP

Two recently published studies address commonly asked questions regarding children with enuresis. The study by von Gontard and associates from Germany conducted a prospective nonblinded evaluation of 167 consecutive children referred to an "outpatient enuresis clinic" as a result of pediatrician referral or in response to newspaper and radio advertisements.[1] The children ranged in age from 5 to 11 years with a mean age of 7¾. Seventy-three percent were males. Sixty-six percent had nocturnal enuresis, 4% had daytime wetting, and 30% had both. All were evaluated for psychiatric diagnosis by a team of child psychiatrists and a pediatrician. All were also screened for behavioral problems by a parent-completed questionnaire. One-third of wetting children had significant behavioral problems and/or psychiatric ICD-10 diagnoses. However, in children with primary, nocturnal enuresis the incidence of these problems was no greater than expected in the general population. In order to determine if subgroups of enuretic children are at increased risk for the behavior/psychiatric disorders, children with nocturnal enuresis were divided into subgroups defined as primary (never dry at night) and secondary (relapse after a period of dryness of 6 months ≥). The children with daytime incontinence were divided into subgroups characterized by urge incontinence, postponement syndrome, and detrusor-sphincter dyscoordination (dysfunctional voiding). Von Gontard et al found that the 49 children with isolated, primary nocturnal enuresis had no greater rate of psychiatric and/or behavior disturbances than expected in the general population. Other subgroups of enuretic children, however, had a significantly increased risk of problems. For example, in children with secondary nocturnal enuresis, 39% and 75% had behavior problems and psychiatric diagnoses, respectively. Similarly, children with daytime wetting due to postponement syndrome were at significant risk, while those with urge incontinence were at low risk. Overall, one-third of the enuretic children had clinically relevant behavioral problems.

Neveus and colleagues, in a study from Sweden, examined depth of sleep and other sleep-associated problems and voiding patterns in children with enuresis in an attempt to evaluate the widely held belief that children with enuresis are often "deep sleepers."[2] Their aim was to clarify the role of sleep in the pathogenesis of nocturnal enuresis. Additionally, they wanted to "test the hypothesis that enuresis may be a result of the coexistence of several separately inherited abnormalities in the same individual." The study was constructed as a questionnaire distributed in Swedish schools for the parents and children (ages 6-10 years) to complete together at home. There was a 74% response rate. Eight percent of children had nocturnal enuresis, including 10% of boys and 5% of girls. Approximately 4½% had daytime incontinence. Results showed that children with enuresis are more difficult to arouse from sleep and are three times more likely to be "deep sleepers." Nocturia is an important risk factor for both past and current enuresis. Family history of enuresis in parents or siblings is also an important risk factor. Additionally, children with past and/or current enuresis appear to have a higher incidence of bruxism, somnambulism, and hypnagogic myoclonus. The study also found that children with daytime incontinence have a greater likelihood of having a sleep disturbance, including bedtime fears, insomnia, and nocturia. The greatest risk factor

for daytime wetting is urgency. Neveus et al conclude that enuretic children have impaired sleep arousal responses, and children with daytime wetting most frequently have bladder instability.

It has long been the impression of many pediatricians that children with nocturnal enuresis are deep sleepers. Data supporting this impression have been almost totally lacking. A 1997 study did look at the intensity of auditory cues required to arouse children from sleep and found that children with enuresis required a higher sound stimulus to awake.[3] The current Swedish study uses an arbitrary rating scale on an anonymous, parent/child-completed questionnaire and comes to the same conclusion. Although there are some aspects of the study design that are open to criticism and Wolfish and colleagues try to take on too much by attempting to investigate disordered sleep in children with daytime wetting, the finding of triple the risk of enuresis among "deep sleepers" is a "keeper" for pediatricians who are discussing a child's enuresis with the family.

Along these same lines, when we evaluate a child with urinary incontinence, there has always been the impression that emotional disorders are almost never a factor in a child with primary, monosymptomatic, nocturnal enuresis. On the other hand, children who develop nocturnal enuresis after a prolonged period of being dry, and children who are daytime wetters are frequently suspect for emotional and/or behavioral disturbances. The results of the study seem to confirm these impressions and make it a valuable addition to our resources regarding children with enuresis. The study is perhaps a bit too informative in its reporting of types of emotional disorders and psychiatric diagnosis. Nevertheless, knowing that a child with daytime setting has a 35% likelihood of a behavioral problem and a 53% likelihood of having at least one psychiatric disorder is helpful when we see this child in the office. This likelihood is even higher if the child has postponement of urination with or without stool retention and encopresis. It is less if the daytime wetting is secondary to urge incontinence. ❖

References

1. von Gontard A, et al. Clinical behavioral problems in day- and night-wetting children. *Pediatr Nephrol* 1999; 13:662-667.
2. Neveus T, et al. Depth of sleep and sleep habits among enuretic and incontinent children. *Acta Paediatr* 1999;88:748-752.
3. Wolfish NM, et al. Elevated sleep arousal thresholds in enuretic boys: Clinical implications. *Acta Paediatr* 1997;86:381-384.

CME Questions

30. *Pasteurella multocida*:
a. is more commonly found in the mouths of pet dogs than pet cats.
b. may be mistaken for *Haemophilus influenzae* by microscopy or culture.
c. infections in infants are usually associated with a dog or cat bite.
d. is a common cause of meningitis in infants.

31. Diabetes in adolescent patients:
a. is associated with a high rate of clinical retinal and renal vasculitis.
b. may be difficult to control because of a relative insulin resistance.
c. is better controlled by multiple daily insulin injections than CSII.
d. hypoglycemia can be prevented by CSII.

32. Immediate surgical biopsy of an enlarged lymph node should be strongly considered for all of the following *except*:
a. the node is located in the supraclavicular area.
b. the presence of other large lymph nodes.
c. induration and redness of the overlying skin.
d. the presence of an abnormal chest x-ray.

33. Adenotonsillectomy:
a. has very few complications.
b. reduces the rate of otitis media during the following year by a small amount.
c. is of long-term benefit in reducing the rate of otitis media in children.
d. reduces the need for subsequent PE tube placement.

34. Ventricular septal defects:
a. have similar prognoses regardless of the location of the defect.
b. have a high rate of spontaneous closure when located in the muscular septum.
c. rarely are hemodynamically significant when the membranous septum is involved.
d. continue to close spontaneously at about the same rate throughout childhood and adolescence.

35. Spanking as a means of discipline of children:
a. is infrequent in North America.
b. has no long-term effects.
c. is controversial among pediatricians.
d. has been shown in scientific studies to be beneficial.

36. Enuresis in children:
a. is more common in girls than in boys.
b. emotional disorders are common in children with primary nocturnal enuresis.
c. behavioral and psychiatric disorders are common in children with daytime enuresis.
d. depth of sleep is not associated with nocturnal enuresis.