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Auricular Chondritis and Ear Piercing

ABSTRACT & COMMENTARY

Synopsis: *Pseudomonas infections of the ear cartilages may result from ear piercing. A survey of cosmetic shops, earring kiosks, and tattoo and body-piercing parlors revealed that many of these businesses used piercing methods that could predispose one to these kinds of infection.*

Source: More DR, et al. Ear-piercing techniques as a cause of auricular chondritis. *Pediatr Emerg Care* 1999;15:189-192.

Two cases of auricular chondritis caused by *Pseudomonas aeruginosa* that occurred after ear piercing prompted a survey of 14 businesses that provided ear piercing. The cosmetic shops and earring kiosks used hand-powered earring "guns," while the tattoo parlors used sterile needles and forceps. The shops and kiosks used benzalkonium chloride, while the tattoo parlors used only iodine-based solutions as ear preparations prior to piercing. The shops and kiosks used a combination of videos, demonstrations, and direct supervision to train employees but did not have a defined training period. The tattoo parlors require completion of an apprenticeship training period of various times. All businesses pierced both the ear lobes and cartilaginous parts of the ear. At all of the businesses, minimal aftercare instructions were given, usually concerning maintenance of ear-hole patency. More and colleagues believe that cosmetic shops and earring kiosks employ piercing methods that could predispose to auricular chondritis, including poor training of employees and use of benzalkonium chloride for skin preparation.

COMMENT BY EUGENE D. SHAPIRO, MD, FAAP

Piercing body parts to insert rings and other jewelry has been in vogue for some time. This article illustrates some of the risks associated with piercing the cartilage of the ear. Because the cartilage is relatively avascular, if the wound becomes infected (the great majority of the time it is with *P. aeruginosa*), the infections often are more

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serious than those that occur after piercing of the lobe of the ear; in these cases, the infections required one or more surgical procedures in addition to intravenously administered antimicrobial therapy to ensure adequate treatment. More et al did a survey of both ear- and body-piercing enterprises in their area and found a number of deficiencies in the procedures of most places. Notably, training, especially for ear piercing, often was minimal, and procedures to minimize the risk of infection (e.g., cleaning both of the skin and of the gun used to pierce ears) often were less than optimal.

There are other potential risks associated with body piercing. For example, both hepatitis B and HIV infection may be transmitted by improperly sterilized instruments. Allergic reactions to the jewelry that is inserted can occur (particularly if it is not either stainless steel or 24-karat gold). Even the common, more "minor" infections (usually caused by *Staphylococcus aureus* or occasionally by group A streptococci) associated with the widely accepted piercing of the ear lobe may turn nasty if the bacteria happens to be a toxin-producing strain (which may even result in fatal toxic-shock syndrome). Pediatricians should inform patients of the risks associated with body piercing (especially when cartilage is pierced) and should investigate which places in their own area can be recommended for piercing ear lobes (or, perhaps, do it in the office themselves). (*Dr. Shapiro is Professor of Pediatrics [Infectious Disease] and Epidemiology and Public Health at the Yale University School of Medicine*.) ❖

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Falls From Heights

ABSTRACT & COMMENTARY

Synopsis: *Falls from heights, a major cause of visits to urban emergency departments, are rarely mortal, particularly when the fall is less than 20 feet. A majority occur in boys, occur in the home, and occur in the summer months. Head injuries and extremity fractures are the most frequent injuries.*

Source: Lallier M, et al. Falls from heights among children: A retrospective review. *J Pediatr Surg* 1999;34:1063-1064.

A retrospective study of children younger than 18 years of age seen in the emergency department (ED) of the Sainte-Justine Hospital in Montreal between April 1994 and March 1997 because of falls was reviewed retrospectively. There were a total of 28,000 ED visits for falls during this period; of these, 1410 patients (5.3%) were admitted to the hospital for fall-related injuries, observation, and treatment. Of the 1410 children who were hospitalized, 64 had falls of more than 10 feet and data were analyzed for these children. Of this group of 64 children, there were 45 boys and 19 girls. The mean age was 7.4 ± 4.6 years. Thirty-six percent of the children were younger than 4 years and 70% were younger than 10 years of age. Fifty patients fell from 20 feet or less (less than 2 stories) and 14 from a height of more than 20 feet. More than 60% of falls occurred in private residences and during the summer season. Fifteen falls (23%) were from balconies, 13 (20%) were from windows, nine (14%) were from trees, six (9%) were from roofs, and six (9%) were from stairs. Sixty falls were accidental and three were self-inflicted, including two suicide attempts and one occurring after alcohol use.

Two patients (3%) had minimal or no injuries, 55 (86%) sustained only a single major injury, and seven (11%) had multiple-system injuries. Multiple injuries were more frequent in children who fell greater distances. Head injuries (skull fractures, concussions, and intracranial injuries) were most frequent and occurred in 25 patients (39%). Fractures (maxillofacial, extremities,

pelvis, and spine) occurred in 22 children (34%). Abdominal injuries occurred in eight children (12%). Surgical intervention was required for 43% of intracranial trauma, 39% of musculoskeletal injuries, 60% of facial trauma, and 50% of spine fractures. The overall survival of this group was 98%. The only death was a child who fell more than 50 feet.

COMMENT BY DAVID T. BACHMAN, MD, FAAP

There is no doubt that fall-related injuries are a major cause of ED visits and admissions in any pediatric hospital or service. This interesting review from Montreal, Canada, has many similarities to previous reports. Significant injuries were infrequent in children who fell from less than 20 feet and most injuries involved the head and/or musculoskeletal system. In the 14 children who fell more than 20 feet, multiple and severe injuries were more frequent. The only death occurred in a child who fell from the fifth floor. The high number of falls from balconies as well as from rather modest heights may reflect the kind of housing that is common in urban Montreal. Lallier and colleagues correctly point out that many falls should be preventable and suggest that pediatricians should be proactive in preventing them. Parents of young children should be counseled about supervision during play activities, especially in areas with access to stairs, balconies, or open windows. Mandatory placement of secure window guards with governmental enforcement is also important, especially in multistoried dwellings. ❖

Technetium Scans and Meckel's Diverticulum

ABSTRACT & COMMENTARY

Synopsis: *Technetium-99 "Meckel's scans" have a relatively low predictive value and may result in the need for operative evaluation despite negative scan results. Exploratory laparotomy or laparoscopy may be indicated instead of scintigraphic scanning in an anemic pediatric patient with lower GI bleeding, especially inpatients in whom there is a high clinical suspicion for a bleeding Meckel's diverticulum.*

Source: Swaniker F, et al. The utility of technetium 99m pertechnetate scintigraphy in the evaluation of patients with Meckel's diverticulum. *J Pediatr Surg* 1999;34:760-765.

Fresca swaniker and associates from the Department of Surgery of the C.S. Mott Children's Hospital of the University of Michigan Medical Center conducted a 22-year retrospective study that evaluated the records of 235 consecutive pediatric patients who had either a Meckel's scan (n = 165) or had a discharge diagnosis of Meckel's diverticulum (n = 70). In all patients, the Meckel's scan had a positive and negative predictive value of 0.93. However, in patients with lower GI bleeding and a hemoglobin less than 11.0 gm/dL, the scan had a sensitivity of 0.60, a positive predictive value of 1.0, but only a negative predictive value of 0.74. Thus, the probability that a child who presents with lower GI bleeding and a hemoglobin less than 11.0 gm/dL will have a Meckel's diverticulum despite a negative scan is 26%. Eight patients with a false negative scan were found to have Meckel's diverticuli containing ectopic gastric mucosa at surgery. Clinical impressions had a major effect on the decision-making process in these patients, despite the results of the scan. The relatively low negative predictive value of the Meckel's scan may result in a need to consider surgery, despite a negative scan result. These findings suggest that surgical exploration may be indicated instead of scintigraphic scanning in the assessment of the anemic pediatric patient with lower GI bleeding, especially in patients in whom there is high clinical suspicion for a bleeding Meckel's diverticulum.

COMMENT BY DANA SCHWARTZ, MD

In most instances, Meckel's diverticuli are asymptomatic and incidentally found at surgery or autopsy. However, in symptomatic patients who present with lower GI bleeding or bowel obstruction, the diagnosis is often made after much difficulty. Both clinical and radiologic examinations are often nondiagnostic. In one series, only 6% of patients were diagnosed preoperatively.[1]

The aim of the present study was to assess the use of technetium (Tc) 99m pertechnetate scintigraphy (Meckel's scan) in the diagnostic workup of the pediatric patient with GI bleeding and a suspected Meckel's diverticulum. This study is performed retrospectively over a 22-year period. A subclass of patients—those with lower GI bleeding and a hemoglobin level of less than 11.0 g/dL who underwent a Meckel's scan—were assessed for use of the scan. Swaniker et al conclude that the scan has a high positive and negative predictive value for all patients with a suspected Meckel's diverticulum, but that the negative predictive value for this important subclass of patients was too low at 0.74 and, therefore, the use of the scan in such patients is compromised. Therefore, they advocate the addition of "minimally invasive laparoscopy," or exploratory laparotomy, instead of nuclear medicine imaging, to the diagnostic algorithm of identifying the presence of a bleeding Meckel's diverticu-

lum in the evaluation of pediatric patients with clinically significant GI bleeding and a high index of suspicion for a bleeding Meckel's diverticulum.

This study did take place over a relatively long period, given the rapidly evolving technology present in all branches of medicine. The sensitivity and specificity of a Meckel's scan may be increased by the use of pentagastrin stimulation and ranitidine (H2-receptor antagonist), used individually or together. Although some of the negative scans in the present study were repeated following the addition of pentagastrin alone, the false negative rate did not change significantly. However, the addition of single photon emission computed tomography (SPECT) imaging may further increase the detection of a small Meckel's diverticulum by precisely depicting the radionuclide distribution within a small volume of tissue.[2] SPECT is analogous to CT and MR in that multiplanar imaging is obtained and displayed as thin sections. SPECT improves anatomic resolution by enhancing the contrast between focal, vascular, and soft tissue uptake of the pertechnetate.

An additional dilemma in the diagnosis of Meckel's diverticuli with ectopic gastric mucosa is related to the size of the diverticulum. When planar scintigraphic imaging is used, it is generally accepted that gastric mucosa of 1 cm^2 is required for proper identification. It is unclear if SPECT is able to detect even smaller volumes. Swaniker et al do not describe the sizes of the lesions resected in the present cases; perhaps only the smaller lesions were missed.

For most children, no anesthesia or sedation is required for nuclear medicine imaging as long as the child can be safely restrained for the duration of the study. The same is not true for any operative procedure.

In general, the diagnosis of Meckel's diverticulum with ectopic gastric mucosa continues to be a difficult one, often only established after the exclusion of other entities. The use of Tc 99m-pertechnetate continues to be a sensitive and specific test (85-90% and 95%, respectively) with a reported accuracy of 90-98%. Improving technology may improve these numbers in the future. When clinically indicated, however, an operative procedure may be necessary to identify a small, bleeding diverticulum. (*Dr. Schwartz is Associate Professor of Diagnostic Radiology [Pediatrics] at the Yale University School of Medicine.*) ❖

References

1. Yamaguchi M, et al. Meckel's diverticulum: Investigation of 600 patients in Japanese literature. *Am J Surg* 1978;136:247-248.
2. Connolly J, et al. Meckel's diverticulum: Investigation of heterotopic gastric mucosa with technitium 99m pertechnate SPECT. *J Nucl Med* 1998;39:1458-1459.

Two Measles Doses are Better Than One

ABSTRACT & COMMENTARY

Synopsis: *Measles vaccine effectiveness was evaluated in a school outbreak of measles in Colorado. Vaccine effectiveness was 92% for one dose and 100% for two doses. The two-dose strategy is important in preventing measles outbreaks.*

Source: Vitek CR, et al. Increased protections during a measles outbreak of children previously vaccinated with a second dose of measles-mumps-rubella vaccine. *Pediatr Infect Dis J* 1999;18:620-623.

A measles outbreak of 62 confirmed cases in 1994 in Mesa County, Colo., was investigated to evaluate measles vaccine effectiveness. The attack rate in unvaccinated children (7/16, 44%) was higher than those with one dose (10/320, 3%) or two doses (0/289, 0%). Two doses of measles vaccines provided 100% protection, compared to 92% for one dose (P = 0.003).

COMMENT BY HAL B. JENSON, MD, FAAP

Between 1984 and 1988, an average of 3700 cases of measles were reported annually in the United States, with a sharp rise in 1989 that continued in 1990 when 27,786 cases of measles were reported. In 1989, the American Academy of Pediatrics and the Advisory Committee on Immunization Practices (ACIP) of the CDC recommended that a second measles dose be given (as MMR). The current recommendations are for the first dose at 12-15 months of age, and the second dose routinely at 4-6 years of age, although the second dose can be administered at any visit if at least one month has elapsed since receipt of the first dose and both doses are administered at or after 12 months of age. Children who have not previously received the first dose should complete the schedule no later than the routine visit at 11-12 years of age. Since this recommendation, the annual number of cases of measles in the United States has dropped below 100, suggesting, but not proving, that this policy has been effective. The age distribution of children with measles in this outbreak was interesting. The age groups with cases included young children who had not received two doses of measles vaccine, and older children (15-18 years of age)

beyond statutory requirements for two doses of measles vaccine. There were no cases of measles among children 12-14 years of age, for whom state law had required two doses of measles vaccine. This suggests that we should be diligent to make sure all children receive two doses, and don't assume that age is protective.

This study is the first that evaluates the effectiveness of the two-dose measles policy in an outbreak, which is the setting in which we are most likely to encounter measles in the United States today. The results convincingly demonstrate the importance and the effectiveness of the second dose in preventing measles, and substantiate the current recommendations for a second dose of measles vaccine for all children. ❖

Parvovirus as a Cause of ITP?

ABSTRACT & COMMENTARY

Synopsis: *Specific viral DNA of parvovirus B-19 was demonstrated in the bone marrow of six of 47 (13%) children with recently diagnosed acute idiopathic thrombocytopenic purpura (ITP) using a polymerase chain reaction technique (PCR). This specific virus may be a possible etiologic agent in some children with ITP.*

Source: Heegaard ED, et al. Role of parvovirus B-19 infection in childhood idiopathic thrombocytopenic purpura. *Acta Paediatr* 1999;88:614-617.

Acute parvovirus b-19 infections may be accompanied with varying degrees of thrombocytopenia and reports of adults have associated idiopathic thrombocytopenic purpura (ITP) with laboratory findings suggestive of parvovirus infections. Heegaard and associates from Copenhagen studied children 6 months to 14 years of age with acute ITP admitted to hospitals in Denmark between April 1991 and October 1992. Bone marrow aspiration specimens obtained at the time of admission had been saved and were available for examination of the presence of intact DNA and subsequently for specific parvovirus DNA by PCR techniques. No serum samples were available from these patients. Specific parvovirus DNA was demonstrated in six of 47 bone marrow specimens. The six cases with demonstrable parvovirus DNA were severely thrombocytopenic. Three cases had a history of a preceding nonspecific illness, but none had erythema, a facial rash, or arthralgia findings characteristic of Fifth Disease. There was no difference in the seasonal onset of the parvovirus positive or negative cases. All six children were treated with either IV immunoglobulin or pulsed methylprednisolone therapy. Three responded within one to eight weeks but the other three children remained thrombocytopenic after six months. Three children were treated with immunoglobulin and had a short course of thrombocytopenia, while those treated with methylprednisolone had more protracted courses.

COMMENT BY HOWARD A. PEARSON, MD, FAAP

One of the characteristic features of childhood ITP is a frequent history of an antecedent infection. Almost all of these antecedent infections are nonspecific respiratory illnesses, although occasionally an association with a specific viral infection or immunizations is seen. There is almost always a one- to two-week delay between the infection and the onset of thrombocytopenia, and it is assumed that during this period, antiplatelet antibodies, triggered by the viral infection, are produced that coat platelets and lead to their rapid destruction. Unfortunately, assays for antiplatelet antibodies are of little value in the diagnosis of acute ITP of children.

Parvovirus B-19 is known to have a high affinity for bone marrow erythroid progenitor cells and most of the parvovirus-related hematological syndromes are associated with aregenerative anemias; however, there have been a few reports that seem to implicate parvovirus in cases of ITP. The most striking of these reports by Murray and associates found evidence of parvovirus DNA in nearly 60% of cases of acute ITP studied in Houston during a local epidemic of clinical parvovirus B-19 infections.[1] In both the Heegaard and Murray studies, bone marrows were assayed for the presence of parvovirus DNA using PCR techniques. This method is notoriously hypersensitive. Presumably as little as one DNA molecule could be recognized because of the enormous DNA amplification of PCR. Notable in both studies was the lack of non-ITP controls, although it is recognized that it would be virtually impossible to obtain a large number of control bone marrow specimens from normal children. Until the PCR data are confirmed by appropriate acute and convalescent serology, I believe the possible etiological role of parvovirus B-19 in a significant number of cases of acute ITP remains unproven. Despite the small numbers of patients studied, the fact that immunologlobulin therapy, which is effective therapy in other parvovirus-related hematologic diseases, was associated with better outcome of acute ITP is provocative. ❖

Reference

1. Murray JC, et al. Childhood idiopathic thrombocytopenic purpura: Association with human parvovirus B19 infection. *Am J Pediatr Hematol Oncol* 1994; 16:314-319.

Ehrlichia Ewingii—Another Human Ehrlichia Identified

ABSTRACT & COMMENTARY

Synopsis: *DNA sequences of Ehrlichia ewingii were identified in leukocytes from four of 413 persons evaluated for possible ehrlichiosis. This is the fourth Ehrlichia species to be recognized to cause human disease.*

Source: Buller RS, et al. *Ehrlichia ewingii*, a newly recognized agent of human ehrlichiosi. *N Engl J Med* 1999; 341:148-155.

Peripheral blood leukocytes from 413 patients with fever, headache, and thrombocytopenia with or without leukopenia were tested by PCR for *Ehrlichia* species. DNA of *E. ewingii*, an agent of granulocytic ehrlichiosis in dogs, was found in four patients. All had been exposed to ticks, and three were receiving immunosuppressive therapy. The disease appears indistinguishable from ehrlichiosis caused by *Ehrlichia chaffeensis* or the agent of human granulocytic ehrlichiosis.

COMMENT BY HAL B. JENSON, MD, FAAP

The story of *Ehrlichia* as a cause of human disease is expanding. The first case of human ehrlichiosis was reported in 1987. The cause was initially thought to be due to the agent of ehrlichiosis in dogs, *E. canis*, but was later shown to be a distinct species and was subsequently named *E. chaffeensis*. In 1994, human granulocytic ehrlichisosis (HGE) was described, caused by the unnamed *Ehrlichia* species that is still known as "the agent of human granulocytic ehrlichiosis," which is closely related to *E. equi* and *E. phagocytophila*. *E. chaffeensis* infection is now distinguished by the name human monocytic ehrlichiosis (HME). Another species, *E. sennetsu*, causes a mononucleosis-like illness in Japan and Malaysia. From 1986-1997 there were 742 cases of HME reported in the United States. These infections are spread by specific ticks: *Amblyomma americanum* (the Lone Star tick) for *E. chaffeensis*, and *Ixodes scapularis*, the same tick that transmits Lyme disease, for HGE. *A. americanum* may also be the vector for *E. ewingii*. Coinfection with Lyme disease and HGE has been reported, and it is possible that coinfection with *E. chaffeensis* and *E. ewingii* may also occur. An interesting aspect of *E. ewingii* is that three of these patients were receiving prednisone, azathioprine, or methotrexate, suggesting that this infection is more likely, or more likely to be symptomatic, in immunocompromised persons. The majority of human *Ehrlichia* infections resolve without specific treatment and without sequelae, although infections can be severe and deaths have been reported. Human ehrlichiosis should be considered in any symptomatic person with a history of recent tick exposure—a thorough history for possible exposure is probably the most sensitive diagnostic test. The presence of thrombocytopenia or leukopenia also suggests ehrlichiosis. Diagnosis by PCR or by serologic testing would take too long to be clinically useful. Doxycycline or tetracycline should be given for a patient with a compatible history and signs, especially if the illness is severe or has not responded to other antibiotics. Maybe instead of telling patients that "It's just a virus" for an unexplained febrile illness, we may have to say—at least for those persons with recent tick exposure—"Of course, it could be an *Ehrlichia*." ❖

Brief Report

Childhood Thyroid Cancer and Chernobyl

Source: Josefson D. Childhood thyroid cancers rise 10-fold in the Ukraine. *BMJ* 1999;319:145.

A large increase in the number of childhood thyroid cancers has occurred in areas of the previous USSR in the years following the Chernobyl reactor meltdown that occurred on April 26, 1986. This resulted in the release of huge quantities of radioactive materials into the environment, including large amounts of radioactive iodine, within the first two weeks after the accident. This resulted in significant fallout in the Ukraine, Belarus, and Russia. It has long been known that radiation exposure, especially to the head and neck, such as thymic radiation for putative thymic enlargement and radiation treatment for tonsillar and adenoidal hypertrophy in children, was associated with a markedly increased rate of thyroid malignancies.

Deborah Josefson reviewed data from Kiev, where long-term information has been compiled to create a registry of pediatric thyroid cancer in the Ukraine, before and after Chernobyl. From 1981 to 1985 there were only 59 cases of thyroid cancer in children from birth to age 18. In contrast, 577 cases were identified between 1985-1997. The rate of pediatric thyroid cancers rose more than tenfold from 0.04 per 100,000 children in 1985 to 0.45 per 100,000 children in 1996-1997. Sixty-four percent of the cancers occurred in children 15 years of age and younger and the highest rates were seen in areas with highest fallout contamina-

tion. Almost 80% of affected children were younger than 10 years old when the accident occurred and 42% were younger than 4 years of age, reflecting the age of peak vulnerability of the thyroid gland to ionizing radiation. Uptake of radioiodine can be reduced by administration of iodine before exposure, and "doomsday" advance preparations include distribution of supplies of nonradioactive iodine for consumption, especially by children, after an atomic explosion.

Not discussed in this brief report is the observation that malignancies other than thyroid cancer and congenital anomalies do not seem to have significantly increased as a result of the Chernobyl fallout (personal communications from Dr. Jack van Hoff, who has studied the epidemiology of childhood cancer in Belarus). —**hap**

Special Feature

Surgical Management of Inguinal Hernia: Exploration of the Contralateral Side

By John Seashore, MD

What to do about the contralateral side in children with an inguinal hernia is an old and still controversial question, endlessly debated by pediatric surgeons. It is an issue because the primary cause of congenital indirect hernias is persistence of a patent *processus vaginalis*. When questioned, more than two-thirds of pediatric surgeons reported that they routinely explore the contralateral groin in both boys and girls.[1] The *processus* remains patent in about 50% of infants and 30% of adults, so there is a large pool of males at risk for herniation but only a small percentage of these ever develop a clinical hernia. Conversely, if the *processus* is closed, there is no risk for an indirect inguinal hernia. There is no way to predict which patients will actually develop a contralateral hernia, so some surgeons routinely explore the opposite sides while others only operate on the affected side. Another approach is to identify which patients have a patent *processus*, usually by laparoscopy, so that only those children have a contralateral exploration. While most hernias in children are asymptomatic, are easily diagnosed by physical examination, and can be repaired with minimal morbidity as an outpatient, a small percentage of children, especially young infants, sustain considerable morbidity from incarceration and strangulation and from obstruction of the blood supply to the testicle, resulting in necrosis and atrophy. Children who have unilateral hernia repair, and then subsequently develop a contralateral hernia, incur the risk of a second general anesthetic and the additional cost and family stress of a second operation. Despite the thousands of children who have hernia repair every year, the best management has not been determined.

The vast majority of studies that have addressed this problem have been retrospective and suffer all the difficulties of that type of analysis. The ideal way to answer the questions would be a prospective study of 1000 or more children who have unilateral hernia repair and are then followed carefully for many years. A report by Tackett and colleagues describes a prospective study of 656 patients followed postoperatively for 6-40 months and is a good effort to attempt to resolve the issue. It is unlikely that there will be substantial numbers of new hernias beyond this period but the incidence will probably still increase, albeit slowly. The overall incidence of subsequent contralateral hernia was 8.8% and Tackett et al argue strongly that routine contralateral exploration is not indicated.

The major difficulty with the report of Tackett et al is the 16.5% incidence of synchronous bilateral hernias, which is far higher than in most reported series and in our experience. They state that the diagnosis of bilateral hernias was made by physical examination or reliable parental history but do not describe the criteria for diagnosis in detail. It is possible, perhaps even likely, that there was a bias toward exploration of the other side if there was any suggestion of a contralateral hernia. They found bilateral hernias in 28% of premature infants and 34% of infants younger than 6 months old. These age groups also had higher rates of subsequent hernia than the mean. A careful analysis of their data shows that, overall, 39% of preemies and 42% of infants younger than 6 months eventually proved to have bilateral hernias. They estimate that 50% of patients would have to have bilateral hernias in order for routine exploration to be cost effective. However, the cost analysis does not take account of the risk and emotional stress of a second operation.

This study and others have contributed to the trend away from routine contralateral exploration, which is appropriate in older children, but may not be for young infants. The risk of contralateral hernia is clearly greatest in the young age group and the risk of significant morbidity is also higher. Infants younger than 1 year of age may present with incarceration as the first sign of a hernia, whereas this is rare in older children. Physical

examination for hernia is more difficult in infants and a hernia may be harder to reproduce and detect in the office setting, leading to delay in diagnosis. Thus, a case can still be made for routine contralateral exploration in young infants, former preemies, and, as noted in Tackett et al's paper, children who present with an incarcerated hernia. The low incidence of contralateral hernias in all other patients, regardless of gender or age, may not justify routine contralateral exploration. Contralateral exploration should also be considered in children who have pulmonary disease or other conditions that may significantly increase the risk of anesthesia, such as cystic fibrosis, chronic pulmonary disease, or heart disease. Laparoscopy via the open sac or the traditional umbilical port is an option that may be preferred by some surgeons but there are no data that prove that this is superior to inguinal exploration. (*Dr. Seashore is Professor of Pediatric Surgery at the Yale University School of Medicine and the Children's Hospital at Yale-New Haven.*) ❖

References

1. Wiener ES, et al. Hernia survey of the section on surgery of the American Academy of Pediatrics. *J Pediatr Surg* 1996;31:1166-1169.
2. Tackett LD, et al. Incidence of contralateral inguinal hernia: A prospective study. *J Pediatr Surg* 1999; 34:684-688.

Correction

In the September 1999 issue of *Pediatric & Adolescent Medicine Reports*, a subhead of the special feature "Updated Varicella Vaccine Recommendations" incorrectly read "Vaccination of Persons Younger than 13 Years of Age." It should be "Vaccination of Persons 13 Years of Age or Older."

CME Questions

12. True statements about infections associated with ear piercing include all of the following *except*:

a. They are frequently caused by *Pseudomonas aeruginosa* when the ear cartilage is pierced.
b. Risks are restricted to bacterial infections.
c. They may be a result of inadequate skin preparation.
d. They may be more serious when the auricular cartilage rather than the ear lobe is pierced.

13. Childhood injuries resulting from falls:

a. most frequently occur in private residences.
b. most frequently occur during the winter months.
c. occur in more girls than boys.
d. are often associated with multiple injuries when the fall is less than 20 feet.

14. Technitium 99m pertechnate scans in the diagnosis of Meckel's diverticula:

a. have a low positive predictive value in the diagnosis of a bleeding Meckel's diverticulum.
b. according to the literature, their sensitivity may be increased with the use of pentagastrin.
c. can regularly detect intradiverticular gastric mucosa less than 1 cm in diameter.
d. when negative, operative intervention is unnecessary.

15. Parvovirus B-19 infections:

a. have been consistently proven to be the etiologic factor in most cases of acute ITP in children.
b. have caused a recognized exanthem in cases who subsequently had marrow parvovirus DNA demonstrated by PCR.
c. may be overdiagnosed in ITP bone marrow because of the sensitivity of PCR analysis.
d. affect primarily the nonerythroid bone marrow precursor cells.

16. Human infections and diseases with *Ehrlichia* organisms:

a. are universally a result of infection by one species of *Ehrlichia*.
b. are often associated with a history of a tick bite.
c. have high mortality even when treated.
d. should not be treated with tetracyclines.

17. True statements about measles vaccination include all of the following *except*:

a. the first dose is recommended at 12-15 months of age.
b. the second dose is recommended at 4-6 years of age.
c. clinical measles occurs largely in children who have received only one dose.
d. a second dose is not recommended for children older than 15 years of age.

18. True statements concerning exploration of the contralateral groin in a child with an inguinal hernia include all of the following *except*:

a. is indicated when the patient is a young infant.
b. is indicated when the patient is a young child who was premature.
c. is indicated regardless of the age of the patient.
d. is indicated when there is incarceration at presentation.

In Future Issues:

Sleep Characteristics of Enuretic and Incontinent Children

Iontophoresis for Local Anesthesia