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COVER

"Sara Handing a Toy to the Baby" was painted by Mary Cassatt (1845–1925). Cassatt, an American artist, was the daughter of a wealthy Philadelphia businessman. She went to Paris to study and never returned. Most of her paintings are of mothers and children, although she herself never married. This lovely painting shows an older sibling handing a toy to her younger brother. We all know that sibling relations are never this serene at all times, but we can always encourage the sharing and love so beautifully shown here. (This painting is reproduced with the permission of the Hill-Stead Museum, Farmington, CT.)

ANSWER KEY

ABSTRACT

Bone Age


Caffey’s Pediatric X-Ray Diagnosis. Silverman FN. Chicago, IL: Year Book Medical Publishers; 1990; Part 4:389–416

Skeletal maturation is expressed as bone age or skeletal age. Bone age is based on the orderly appearance of the ossification centers and, therefore, on the successive stages of the development (or maturity) of the skeleton as seen on radiographs. This is not a measure of size, but rather of shape and position.

There are many methods of estimating bone age, and almost any part of the body can be used. The hand and wrist are the most practical and the most often used. The Greulich and Pyle method employs an atlas of examples of radiographs of the entire left hand and wrist of healthy children at various ages. An aggregate bone age is estimated after every bone of the hand and wrist are compared with standards. The method of Tanner-Whitehouse uses separate maturity indicators for 20 hand/wrist bones followed by a calculation of final maturity. Other approaches include: 1) counting growth centers and 2) pictographic approaches.

Bone age has been used as a clinical tool in many different settings. The various approaches used to predict adult, mature height use bone age as an indication of skeletal maturity. Delayed growth, whether secondary to genetic, endocrine, environmental, or nutritional factors, is assessed by using bone age. Because the radiographic assessment of bone growth is a measure of a maturation process, it is considered to be a measure of growth potential. Therefore, predicted bone age measurements can be clinically useful in Cornelia de Lange syndrome (retarded), congenital and acquired hypothyroidism (markedly and mildly retarded, respectively), hyperthyroidism (possibly accelerated), adrenogenital syndrome (accelerated), and Legg-Perthes disease (commonly retarded), to name a few.

There are limitations to using bone age as a clinical tool; the accuracy of the method used can be variable. When determining bone age by using the Greulich and Pyle method, it is tempting to estimate maturity quickly from a radiograph that most resembles the patient’s hand and wrist rather than to compare each bone with the standards. This estimate greatly alters the reliability of the technique. The Tanner-Whitehouse method, though more time-consuming, does not allow for this short-cut. However, when both methods are performed correctly, they are equally reliable. Questions also have arisen concerning the generalizability of these methods, whose original samples included white upper socioeconomic individuals. Differences between groups—for example, African-Americans versus whites, males versus females, and those of high versus low socioeconomic status—are not thought to be sufficient to warrant different standards at this time. Finally, when assessing bone age in a clinical setting, it is always important to remember the wide range of normal variability and the necessity of serial observations before reaching conclusions.

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PIR QUIZ

7. The following statements are all true except:
   A. Bronchiolitis is any wheezing-associated illness in early life preceded by signs and symptoms of an upper respiratory infection.
   B. Bronchiolitis is a highly seasonal disease peaking in spring and autumn.
   C. The variable most closely associated with the development of bronchiolitis appears to be crowding.
   D. Respiratory syncytial virus is the most common cause of bronchiolitis.
   E. The major transmission of RSV is by direct contact.

8. All of the following are predictors of infants who have bronchiolitis developing progressive or life-threatening illness except:
   A. Prematurity (less than 34 weeks) and less than 3 months of age.
   B. Oxygen saturation of less than 90%.
   C. Congenital heart disease.
   D. Milk allergy.
   E. Feeding poorly.

9. Each of the following statements is correct except:
   A. A small number of infants with bronchiolitis will respond to an aerosolized beta-adrenergic agent.
   B. A good response to an aerosolized beta-adrenergic agent warrants a course of oral therapy.
   C. Most infants who have bronchiolitis will respond without the use of corticosteroid therapy.
   D. Ribavirin should only be used in infants who have RSV bronchiolitis or pneumonia in whom respiratory failure is present or imminent.
   E. Most infants who have bronchiolitis will require antibiotic therapy.

10. All the following statements about bronchiolitis are true except:
    A. Infants who have bronchopulmonary dysplasia or congenital heart disease should be referred to a tertiary care unit, even if the disease is mild.
    B. Some infants who have bronchiolitis will have classic asthma later in childhood.
    C. Recurrent wheezing through 2 to 3 years of life can develop.
    D. RSV infection does not spread to health-care workers.
    E. RSV can be recovered from individuals the day before symptoms occur.

TECHNICAL TIPS

Releasing Penile Foreskin Trapped in a Zipper

Zipper injuries to the penis are not uncommon and generally occur when an uncircumcised male zips up his pants too quickly and entrap the foreskin of the penis in the zipper. The male is usually between 3 and 6 years of age and may not have been wearing underpants. When the patient presents to the office or emergency department, he is usually in a great deal of pain and may be very anxious. The zipper can be easily removed from the foreskin by cutting the median bar of the zipper with a bone cutter or other sharp scissor device (Figure). After the median bar of the zipper is cut, the zipper, with the fastener intact, will fall apart, which will allow its removal from the foreskin. No local anesthetic is necessary, although some patients may require sedation if they cannot cooperate and stay still while the median bar is being cut.

REFERENCES


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FIGURE. Removal of a zipper from the foreskin by cutting the median bar of the zipper.
### Table 2: Treatment of Vulvovaginitis and Cervicitis in the Adolescent

<table>
<thead>
<tr>
<th>DIAGNOSIS</th>
<th>TREATMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bacterial vaginosis</td>
<td>Metronidazole, 500 mg po bid × 7 days or 2-g single dose</td>
</tr>
<tr>
<td></td>
<td>Clindamycin, 300 mg po bid × 7 days</td>
</tr>
<tr>
<td></td>
<td>Clindamycin vaginal cream 2% qhs × 7 nights</td>
</tr>
<tr>
<td>Candida</td>
<td>Clotrimazole, *1% cream, 1 applicatorful vaginally qhs × 7 nights</td>
</tr>
<tr>
<td></td>
<td>Clotrimazole,*100 mg vaginal tablets vaginally qhs × 7 nights</td>
</tr>
<tr>
<td></td>
<td>Miconazole,*100 mg suppository vaginally qhs × 7 nights</td>
</tr>
<tr>
<td></td>
<td>Miconazole 2% cream,*1 applicatorful vaginally qhs × 7 nights</td>
</tr>
<tr>
<td></td>
<td>Butoconazole 2% cream, 1 applicatorful vaginally qhs × 3 nights</td>
</tr>
<tr>
<td></td>
<td>Terconazole 0.4% cream, 1 applicatorful vaginally qhs × 7 nights</td>
</tr>
<tr>
<td></td>
<td>Terconazole 0.8% cream or vaginal suppository qhs × 3 nights</td>
</tr>
<tr>
<td>C trachomatis†</td>
<td>Doxycycline, 100 mg po bid × 7 days</td>
</tr>
<tr>
<td></td>
<td>Erythromycin, 500 mg qid × 7 days or 250 mg qid × 14 days (if pregnant)</td>
</tr>
<tr>
<td></td>
<td>Azithromycin, 1 g po</td>
</tr>
<tr>
<td></td>
<td>Ofloxacin, 300 mg bid × 7 days (&gt;18 y, not pregnant)</td>
</tr>
<tr>
<td>N gonorrhoeae‡§</td>
<td>Ceftriaxone, 250 mg IM</td>
</tr>
<tr>
<td></td>
<td>Cefixime, 400 mg po</td>
</tr>
<tr>
<td></td>
<td>Cefpodoxime, 200 mg po</td>
</tr>
<tr>
<td>Trichomonas</td>
<td>Metronidazole, 2 g po single dose</td>
</tr>
</tbody>
</table>

* Available over the counter
† Refer to Centers for Disease Control guidelines for other treatment options.
§ Patients diagnosed with N gonorrhoeae should receive a course of treatment for Chlamydia as well.

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**PIR QUIZ**

11. The most common etiology of vulvovaginitis in prepubertal girls is:
   A. Group A beta-hemolytic streptococci.
   B. Non-specific.
   C. Neisseria gonorrhoeae.
   D. Chlamydia trachomatis.
   E. Trichomonas.

12. Vaginal discharges associated with bleeding may be due to all of the following except:
   A. Shigella.
   B. Group A beta-hemolytic streptococci.
   C. Foreign body.
   D. N gonorrhoeae.
   E. Sexual abuse.

13. The best way to visualize the vagina and cervix in a prepubertal girl is:
   A. Supine (frog-leg) position using a speculum.
   B. Supine (frog-leg) with an otoscope without a speculum.
   C. Knee-chest position with a speculum.
   D. Knee-chest position with an otoscope without a speculum.

14. An adolescent with a red, edematous vulva with fissures and a thick curd-like discharge most likely is infected with:
   A. Trichomonas vaginalis.
   B. N gonorrhoeae.
   C. Candida albicans.
   D. C trachomatis.

15. A recommended regimen for treating an adolescent with culture-proven N gonorrhoeae is:
   A. Ceftriaxone.
   B. Ceftriaxone and doxycycline.
   C. Cephalaxin and dicyclomycin.
   D. Metronidazole and clindamycin.
   E. Doxycycline.
strophic. Because most near-drowning events occur during a lapse in adult supervision, guilt and blame surrounding the event commonly create a rift between parents, resulting in an exceedingly high incidence of divorce in the aftermath. These families deserve a great deal of anticipatory guidance and support and may require referral for professional counseling.

**SUGGESTED READING**


Young RSK, Zalneraitis E, Dooling EC. Neurological outcome in cold water drowning. *JAMA*. 1980;244:1233–1235

**PIR QUIZ**

16. Each of the following statements about the epidemiology of drowning is true except:

A. The victim of fatal submersion is much more likely to be male than female.

B. Although drownings occur throughout the year, they are most common during the summer months.

C. Alcohol use is strongly linked to drowning deaths among adolescents who were swimming alone.

D. Most drownings of preschool children in pools and bathtubs occur during a lapse of adult supervision of less than 5 minutes.

E. Fencing eliminates the drowning of young children in residential swimming pools.

17. A previously healthy 2-year-old boy is found submerged in a backyard pool. He had been last seen 20 minutes earlier. A palpable pulse and spontaneous respirations are restored at the site, but he remains comatose, vomits spontaneously, and is rushed to your emergency room. On arrival, a complete evaluation may be expected to yield each of the following findings except:

A. A rectal temperature of 35°C.

B. Sinus bradycardia.

C. Oxygen saturation of 88% in room air.

D. A serum sodium level of 125 mEq.

E. Bilateral pulmonary infiltrates.

18. A previously healthy 2-year-old boy is found submerged in a backyard pool 5 minutes after he had been left unsupervised on the porch while his mother ran to answer the telephone. Pulled from the pool, he responded within a minute to CPR and now, as the paramedics arrive, is awake and crying vigorously. His examination is otherwise unremarkable. Subsequent medical and psychological management of this well-appearing boy should be based on each of the following considerations except:

A. Acute cerebral edema may develop.

B. Adult respiratory distress syndrome remains a threat.

C. Lung infection poses a significant risk.

D. The risk of permanent cardiac injury is very low.

E. The boy is unlikely to develop a fear of water hazards.

19. A 2-year-old boy suffers submersion in an icy lake. After initial resuscitation at the site, he is transported to a hospital where he is placed on advanced life support. Upon admission, his rectal temperature is 30°C. Regarding submersion hypothermia and its management, each of the following is true except:

A. The diving reflex will provide more protection during cold water submersion to a young child than to an adult.

B. Primary hypothermia may be protective by lowering brain metabolism and limiting cerebral oxygen debt.

C. Uncorrected hypothermia interferes with efforts to control fibrillation and stabilize the circulation.

D. After taking measures to prevent additional conductive heat loss, the next essential step in managing severe hypothermia is immediate rewarming of the body surface.

E. Resuscitative efforts should continue until hypothermia is largely corrected.

20. Without a history of icy water submersion, an unfavorable neurological prognosis for victims of near-drowning is likely in the presence of each of the following except:

A. First spontaneous respirations at 10 minutes of resuscitation.

B. Submersion of more than 25 minutes.

C. Apnea at time of admission to emergency department.

D. Initial arterial pH of 6.8.