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Cover: Breton Girls, Dancing, Pont Aven, by Paul GAUGUIN (Copyright, National Gallery of Art, Washington, DC; Collection of Mr and Mrs Paul Mellon). Gauguin was a French Symbolist and lived from 1848 to 1903. Gauguin traveled the world as a seaman and pursued a career in banking in Paris and Copenhagen before concentrating on his skills as a painter and sculptor. He was determined to develop a new approach to painting through which to symbolically express a thought or mood, in contrast to the impressionist approach which sought to reproduce a scene through the exact recording of every nuance of color and light. Completed in 1888, Breton Girls Dancing, Pont Aven is one of Gauguin's earliest works in this new style. The themes of friendship, community, exercise, and appreciation of nature depicted here are important elements in the total health and development of every child.

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Commentary

Slowing Down

I am a member of a four-person general pediatric practice, and one of my partners has recently expressed the desire to “slow down.” This presented a problem in our situation because the workload and compensation are equally divided among the full partners. We wanted to be fair to everyone involved.

I consulted several friends who are in groups that have had a similar situation. No one seemed to be entirely satisfied with his solution. The major problem is equitable compensation. The largest income in a general pediatric practice is generated from 9 AM to 5 PM during the weekdays. However, nights and weekends are the reason many individuals leave practice, voluntarily or involuntarily.

At 5 AM, after writing orders for an infant delivered by a cesarean section I attended, the idea light bulb flashed. This happens to me often at crazy hours.

As an example, assume there is a group of five pediatricians who share work and income equally. The practice nets $500 000 annually, each member making $100 000. In a 5-week period, each individual will work 25 days and 5 weekday nights, which include office hours and 2 weekend days and nights.

The problem is to ascribe to each unit a fair value. I use the number 10, made famous by Bo Derek, as the highest value (Table 1). In assigning values, I am prejudiced by the fact that, although they do not generate the income, nights and weekends are considered less desirable work times and thus deserve a higher figure (Table 2).

Now assume that the senior partner decides to give up nights and weekends and works only days. This individual will accumulate 100 points. The part timer will make 0.67 × 100 000 or $66 666. The remaining four full-time physicians will pick up the load and also share the difference of $100 000 − 66 666 = $33 334 ÷ 4 = $8334.

I have plugged this point system into various situations and the end result always seems fair.

To make the system work, an individual should work no less than half time because paying expenses such as medical malpractice insurance, dues, etc becomes a problem. Also, income derived from hospital work can be based on a percentage of hospital coverage a partner elects to do.

There are many variables with each practice, but I believe the idea of assigning points to weekends, nights, and days has merit. Some practices work on a productivity basis which I think fosters competitiveness and divisiveness in a group. Also, based on productivity, one could work just 9 AM to 5 PM and make almost as much as the individual working nights and weekends.

It is best to have a procedure for slowing down in place before needed. This prevents the need for negotiating during what may be an emotional time. I believe that a physician who has worked in a group and has to decrease workload because of health, age, or a family situation should have an opportunity to remain in the group and not have to look for another job or be “put out to pasture.”

Vincent J. Menna, MD
Doylestown, PA

Editorial Board Response

Dr Menna makes several important points. If a partner anticipates reduction of his or her workload, plans should be worked out in advance for equitable payment, recognizing that those activities that generate the most income are not always the ones that impose the greatest stress. His
and eradication of microbes. Studies indicate that passively administered antibody or antibody induced by active immunization clears bacteria, notably S pneumoniae and H influenzae, from the middle ear. Children lacking the ability to produce these antibodies after natural disease seem more susceptible to subsequent episodes of otitis media.

There are many possibilities for developing interventions to block the pathophysiology events leading to middle ear inflammation and to augment host defenses. Antibacterial drugs no doubt will continue to be used as part of the medical armamentarium against acute and chronic otitis media, but considerably more must be learned about the distribution of these drugs into the middle ear if they are to be used effectively. Anti-inflammatory drugs, such as corticosteroid drugs to inhibit the generation of arachidonic acid metabolites, may play a role in medical management, but these treatments should be considered still investigational. Finally, bacterial and viral vaccines hold the greatest promise for ultimately preventing the disease. Vaccines against S pneumoniae and nontypable H influenzae and against respiratory syncytial virus, influenza, and adenoviruses are in various stages of development. These interventions may have a profound impact on the incidence of otitis media.

ACKNOWLEDGMENTS

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The author is grateful to Dr Michael M. Paparella, who provided the photomicrographs of temporal bones from children with silent, chronic otitis media (Figs 4 and 5).

SUGGESTED READING


Self-Evaluation Quiz

1. Among the following, the factor that contributes most to the occurrence and recurrence of otitis media in children is:
   A. Genetic disposition.
   B. Eustachian tube dysfunction.
   C. Respiratory allergies.
   D. Food allergies.
Otitis Media

2. The most common finding on bacteriologic culture of middle ear fluid in children with acute otitis media is growth of:

A. No organism.
B. Streptococcus pneumoniae.
C. Streptococcus pyogenes.
D. Haemophilus influenzae.
E. Branhamella catarrhalis.

3. Among the following, the virus least likely to be responsible for respiratory infections that precede episodes of otitis media is:

A. Rhinovirus.
B. Respiratory syncytial virus.
C. Adenovirus.
D. Influenza virus.

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**Peptic Ulcer: New Etiology**


Since the 1983 evidence has accumulated linking the presence of *Campylobacter pyloridis* colonization on the gastric mucosa with antral gastritis in adults and children, Drumm and coauthors have reported a retrospective study of 34 children in whom they showed the association of *C pylori* with gastritis. Subsequently, they studied 71 children prospectively and found that the presence of *C pylori* on the antral mucosa was specifically associated with primary (no known cause for the disease) antral gastritis (7 of 10 children) and may also be associated with primary duodenal ulceration (5 of 5 positive findings on the antral mucosa but not on the duodenal mucosa). These studies were carried out on endoscopic gastric biopsy specimens evaluated for gastritis and stained with a special silver stain to demonstrate the presence or absence of the spiral shaped Gram-negative bacteria. A second specimen from the same biopsy tissue was cultured for *C pylori* and tested with a rapid urease screening test for the presence of bacteria. Eight children with secondary (known cause) gastritis and 49 children with histologically normal biopsy specimens had no organism identified, and their urease screening test results were negative.

Patients infected with *Campylobacter pylori* are presumed to have inflammation due to the presence of the organism on the surface, between antral enterocytes, deep inside antral pits, and inside enterocytes. Treatment of the gastritis with bismuth compounds eliminated the organisms and the gastritis in most patients, although symptoms of heartburn, indigestion, belching, and nausea were not significantly improved with treatment.

**Comment:** Primary antral gastritis, diagnosed by biopsy, may be caused by *C pylori*. This Gram-negative, spiral shaped, microaerophilic organism can be demonstrated by special isolation methods or gastric urease assay as a special marker. Recent studies have shown that the toxic factor in *C pylori* may be protein and that an indirect immunofluorescence test proved to be a sensitive and diagnostic method. An enzyme-linked immunosorbent assay may be particularly useful for monitoring the outcome of therapy. Newer treatment regimens include quinolone antibiotic agents and nalidixic acid, and the quinolones have been shown to be bactericidal and may prove useful in the eradication of *C pylori* from the gastric mucosa. (Kurt Metzl, MD, *Editorial Board*)
Fluid and Electrolyte Metabolism

Duchownik loss is due to diarrhea, oral electrolyte glucose solution can be started which provides potassium as well as sodium needed for maintenance purposes.

Hyponatremic dehydration must be differentiated from dilutional hyponatremia secondary to water retention. Severe head trauma or central nervous system infections such as meningitis or encephalitis can result in inappropriate secretion of antidiuretic hormone and water overload with consequent dilutional hyponatremia. The physiologic compensation is urinary excretion of sodium possibly due to the action of atrial natriuretic peptide. The diagnosis is made by evaluation of renal function. Reduction of serum sodium concentration with serum urea nitrogen concentration in the normal or low range indicates dilutional hyponatremia rather than hypovolemic dehydration. The appropriate treatment is restriction of fluids to minimal requirements for insensible water loss until abnormal antidiuretic hormone secretion ceases.

Diabetic Ketonacidosis

The dehydration of diabetic ketonacidosis results from the osmotic diuresis caused by glycosuria and the loss of the cations sodium and potassium in the urine along with the four-carbon organic anions acetoacetate and β-hydroxybutyric acid. In addition, vomiting is a frequent manifestation of ketoacidosis, leading to further losses of sodium and chloride. Because of the osmotic effect of the markedly elevated levels of extracellular glucose, intracellular dehydration is severe such as in hypernatremic dehydration. An uncommon but disastrous complication of the treatment of diabetic ketoacidosis is brain edema and medullary herniation. The available evidence suggests that this complication is the result of excessively rapid rehydration or excessive volume of intravenous fluid. For that reason, it is recommended that the rehydration program be gradual.

An initial infusion of an isotonic saline bicarbonate solution (three parts 0.9% NaCl and one part 1.26% NaHCO₃), 10 to 20 mL/kg, can be given rapidly if there is evidence of circulatory failure. Otherwise, this solution should be infused at a rate of 6 to 8 mL/kg per hour for 4 hours. Insulin is added by "piggy back" infusion at a rate of 0.1 U/kg per hour. After this time, the infusion solution should be changed to 0.45% NaCl and 2.5% glucose and continued at the same rate. Even though the serum bicarbonate is markedly reduced and blood pH is low, no attempt should be made to increase the bicarbonate concentration rapidly. The bicarbonate concentration in the saline bicarbonate solution is sufficient to prevent further dilution of extracellular bicarbonate which would result if NaCl solution alone were injected. As the insulin produces its physiologic effect, the extracellular glucose concentration decreases as cell uptake of glucose is stimulated. With deposition of liver glycogen, liver metabolism of fatty acids is reduced, formation of the four-carbon organic acids diminishes, and extracellular bicarbonate concentration increases as the organic acid concentration decreases.

As cell uptake of glucose proceeds, cell uptake of potassium and of phosphate results. At this stage, hypokalemia and hypophosphatemia occur. Potassium should be added to the intravenous fluid at a concentration of 20 to 30 mEq/L. Half of the potassium can be given as potassium phosphate and half as potassium chloride or acetate. Potassium phosphate alone may increase extracellular phosphate too rapidly and precipitate hypocalcemia tetany. The blood glucose must be monitored and the glucose concentration in the infusion fluid should be increased to 5% or even 10% to maintain adequate blood glucose concentrations until ketosis has been corrected. Oral administration of fluids should be attempted as soon as the patient's condition permits, and intravenous fluids may not be necessary after 12 to 18 hours of treatment.

References


Self-Evaluation Quiz

4. General principles of the initial treatment of a child with isotonic dehydration and hypovolemia include each of the following, except:
   A. Plasma or albumin solutions are rarely needed.
   B. A hypertonic solution of glucose and sodium salts is generally indicated.
   C. A high concentration of sodium bicarbonate is frequently required.
   D. A volume of 40 mL/kg can appropriately be infused in the first hour.
   E. Potassium should not be added to the infusion until urine output is established and acidosis corrected.

5. Which of the following would not be expected in a child with severe dehydration?
   A. Pulse rate of 70 beats per minute.
   B. Hyperpnea.
   C. Cold cyanotic hands and feet.
   D. Anuria.
   E. Hypotension.
Dehydration

6. Which of the following would be inconsistent with a diagnosis of hypertonic dehydration?  
   A. History of profuse watery diarrhea.  
   B. Weight loss of 10% to 15%.  
   C. Skin feels "doughy."  
   D. Patient alert despite signs of circulatory failure.  
   E. Patient convulses after rapid restitution of water deficit.

7. Unexplained hyponatremic dehydration with a markedly elevated serum potassium level develops in a 2-day-old male infant. The most likely diagnosis is:  
   A. Congenital adrenal hyperplasia.  
   B. Cystic fibrosis.  
   C. Vasopressin deficiency diabetes insipidus.  
   D. Nephrogenic diabetes insipidus.  
   E. Congenital lactase deficiency.

8. An 8-year-old girl with diabetic ketoacidosis was given an infusion of isotonic saline bicarbonate solution and insulin 5 hours ago. She has responded appropriately. New orders would be likely to include each of the following, except:  
   A. 10 to 15 mEq/L of potassium chloride or acetate.  
   B. 10 to 15 mEq/L of potassium phosphate.  
   C. 2.5% to 5% glucose.  
   D. 0.45% (77 mEq/L) NaCl.  
   E. 44.6 mEq/L of sodium bicarbonate.

Drugs and Gonadal Function


Chronic abuse of alcohol and other drugs has been found to be associated with suppression of the hypothalamic-pituitary-gonadal axis in pubertal boys. Luteinizing hormone, follicle-stimulating hormone, and testosterone levels in these boys are less than one-half of normal levels. Cessation of substance abuse results in a significant increase in testosterone levels, although levels do not attain those of control subjects who do not use alcohol and other drugs; follicle-stimulating hormone and luteinizing hormone levels appear to increase much less significantly. In pubertal adolescents, these lower levels of sex steroids and gonadotropins may not be manifested clinically because substance-abusing boys have testicular volume, penile length, and pubic hair similar to those of control subjects. However, in one reported case, chronic substance abuse in a prepubertal boy resulted in pubertal arrest. The effect appears to be at the level of testicular function because testicular volume appears to be normal.

These effects on the hypothalamic-pituitary-gonadal axis have been found primarily in users of alcohol and marijuana but also may be seen in users of other drugs such as amphetamines, cocaine, LSD, and amyl nitrite.

Comment: In addition to the psychologic effects of substance abuse, illicit drugs have the potential for significant adverse effects on the endocrine system as well. Many illicit drugs appear to be able to suppress the hypothalamic-pituitary-gonadal axis; adrenal function appears to be unaffected. Because of the one reported case, it is speculated that drug abuse in prepubertal boys can lead to significant delays in onset of puberty. The effects on pubertal boys and on later fertility are unknown. The pediatrician should be aware of the effects of chronic substance abuse on the endocrine system and counsel the young patients in whom substance abuse is suspected about the potential effects on sexual development and functioning. (Frederick P. Rivara, II, MD, Editorial Board)
prominence of the costal cartilages anteriorly representing the lower thoracic cage may occur. These are virtually always cosmetic problems because true neoplasms of the costal cartilages in children are rare. Local excision is curative.

SUMMARY

Chest wall deformities are principally depression deformities, the most common being pectus excavatum (funnel chest). The most common protrusion deformity is pectus carinatum (pigeon breast). Pectus carinatum is a cosmetic problem, but its presence can be psychologically devastating to the patient. Pectus excavatum is definitely a physiologic problem, the effects of which may be reversible by surgical correction. Surgery is safe, complications are minimal, and results are usually satisfactory.

REFERENCES


Self-Evaluation Quiz

9. True statements pertaining to pectus excavatum include each of the following, except: It is:
   A. The most common chest wall deformity.
   B. Present in about 1 in 300 people.
   C. Most common in black girls.
   D. Most likely polygenic or multifactorial.
   E. Frequently seen in persons with Marfan syndrome.

10. Which of the following would not be expected in a patient with pectus excavatum?
   A. Maximum depression of sternum near xiphoid.
   B. Completely normal roentgenographic findings.
   C. Systolic murmur.
   D. Tall and thin habitus.
   E. Electrocardiographic abnormalities.

11. Each of the following is a true statement pertaining to surgery and pectus excavatum, except:
   A. Surgical correction is best done just before the pubertal growth spurt.
   B. The long-term results of surgery are best determined after full growth is achieved.
   C. The majority of patients have a basically normal chest contour after surgery.
   D. The risk of surgery should be little more than the anesthetic risk.
   E. Cardiopulmonary function commonly improves postoperatively.

12. Each of the following is a true statement about pectus carinatum (“pigeon breast”), except:
   A. It is usually first noted in a child of approximately 7 or 8 years of age.
   B. It tends to improve spontaneously at puberty.
   C. Most patients do not have compromised cardiopulmonary function.
   D. Most patients are asymptomatic.
   E. Surgical treatment is similar to that used for pectus excavatum.
ACKNOWLEDGMENTS

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REFERENCES


Self-Evaluation Quiz

13. Which of the following does not suggest a worsening of dehydration?
A. Decreasing urine flow rate.
B. Decreasing urine osmolality/specific gravity.
C. Progressive weight loss.
D. An increase in hematocrit.
E. An increase in total serum protein.

14. Regarding fluid management, which of the following is least likely to be correct?
A. Maintenance: 5% dextrose, 36 mEq/L of NaCl, 20 mEq/L of KCl.
B. Pyloric stenosis: 5% dextrose, 75 mEq/L of NaCl, 40 mEq/L of KCl.
C. Resuscitation: 10% dextrose in H2O.
D. Gastric fluid replacement: 5% dextrose, 75 mEq/L of NaCl, 30 mEq/L of KCl.
E. Third space/sequestrational losses: 5% dextrose, Ringer’s lactate.

15. Which of the following is a false statement pertaining to the postoperative inappropriate secretion of antidiuretic hormone?
A. A urine flow rate of 1 to 2 mL/kg per hour is common.
B. Causes include fear, painful stimuli, anesthesis, and positive-pressure ventilation.
C. The main principle of treatment is fluid restriction.
D. There is an increased urine specific gravity and sodium concentration, despite hypotension.
E. Hypotension and hyperkalemia are usually present.

16. Approximate daily maintenance (per kg/24 h) needs for infants include each of the following, except:
A. 100 kcal.
B. 100 mL H2O.
C. 3 mEq of sodium.
D. 3 mEq of bicarbonate.
E. 2 mEq of potassium.

17. Significant loss of which of the following body fluids is least likely to result in HCO3- depletion (metabolic acidosis)?
A. Gastric.
B. Pancreatic.
C. Small intestinal.
D. Ileostomy.
E. Diarrhea.