Lesson 22: CT and MR Imaging of Pediatric Calvarial Lesions
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Question 22-1. This question calls attention to the most common cause of Pott’s puffy tumor, which is frontal sinusitis (C). Pott’s puffy tumor predominantly occurs in the pediatric age group and is a subperiosteal abscess, usually located in the frontal bone often about an orbit due to frontal sinusitis. So (C) is the correct answer.

Question 22-2. This question deals with the most common tumor to metastasize to the calvarium in the pediatric population, which is neuroblastoma (B). Twenty-five percent of children with a neuroblastoma have metastatic involvement of the skull, which are expansile and lytic lesions. So (B) is the correct answer.

Question 22-3. This question refers to the cause of a left harlequin orbit noted clinically in a newborn. The harlequin orbit is the result of elevation of the superolateral wall of an orbit due to craniosynostosis of the ipsilateral (left) coronal cranial suture (A). All of the other options—Pott’s puffy tumor (B), fibrous dysplasia (C), subgaleal hematoma (D), and leptomeningeal cyst (E)—could involve the bones or soft tissues about an orbit, but none of them is responsible for a harlequin orbit. So (A) is the most likely diagnosis, and (A) is the correct answer.

Question 22-4. This question brings attention to a pediatric calvarial lesion with a traumatic etiology, which is a leptomeningeal cyst (E). A leptomeningeal cyst, also termed a “growing fracture,” results from herniation of pia and arachnoid through a calvarial fracture, creating a transcranial arachnoid cyst. Cerebrospinal fluid pulsations prevent healing of the fracture. Most leptomeningeal cysts occur in very young children, younger than age 3 years. So (E) is the correct answer.

Question 22-5. This question concerns an imaging vignette in which multiple lytic calvarial lesions with “beveled edges” were noted on the head CT examination of a 2-year-old child. Although all of the options provided produce lytic calvarial lesions in children, only the lytic lesions of Langerhans cell histiocytosis (D) have beveled edges. So (D) is the most likely diagnosis, and (D) is the correct answer.

Question 22-6. This question addresses another imaging vignette in which the head CT examination of a 3-year-old boy shows widening of the diploic space, thickening of the inner table, and thinning of the outer table. The CT findings are those of extramedullary hematopoiesis, which is due to chronic anemia. Of the options provided, beta thalassemia major (A) causes chronic anemia. So beta thalassemia major (A) is the most likely diagnosis, and (A) is the correct answer.
Question 22-7. This question represents a clinical and MR imaging vignette in which a 2-day-old neonate presented after forceps-assisted vaginal delivery with a large boggy scalp mass clinically extending across sutural boundaries. On MR imaging, the soft-tissue collection continued to enlarge and extend into the neck. Both the clinical and imaging features are compatible with a subgaleal hematoma (B). A leptomeningeal cyst (A) is due to an unhealed skull fracture; a cephalohematoma (C) does not extend beyond sutural boundaries; and a caput succedaneum (D), although capable of crossing sutural boundaries, does not enlarge and extend into the neck. So (A), (C), and (D) are unlikely diagnoses, but (B) is the *most* likely diagnosis; and (B) is the correct answer.

Question 22-8. This question pertains to the location of the majority of encephaloceles, which is midline and occipital (D). Encephaloceles are herniations of cerebral tissue, meninges, and CSF through a calvarial defect resulting from a neural tube closure anomaly. The contents of cephaloceles are best delineated by MRI. So (D) is the correct answer.

Question 22-9. This question emphasizes the *most* common pediatric calvarial tumor, which is an epidermoid inclusion cyst (D). Epidermoid inclusion cysts and dermoid inclusion cysts account for 60% of pediatric calvarial tumors, but epidermoid inclusion cysts are 5 times more common than dermoid inclusion cysts. Epidermoid inclusion cysts are benign and usually present in a parasagittal location. Typical radiographic features include a round or lobulated lytic calvarial lesion with a sclerotic rim. So (D) is the correct answer.

Question 22-10. This question draws attention to the cause of trigonocephaly, which is premature closure of the frontal/metopic suture (C). Trigonocephaly presents clinically with forehead wedging and hypertelorism (i.e., increased distance between the orbits). So (C) is the correct answer.

**Answer Key for Volume 37 # 22:**

1. C
2. B
3. A
4. E
5. D
6. A
7. B
8. D
9. D
10. C