Question 12-1. This question emphasizes several important features of retrosomatic clefts. These anomalous congenital defects are located in the pedicle (B), most commonly in young women (C). So (B) and (C) are true. They may be unilateral or bilateral (E) or at multiple levels. Thus (E) is true. Occasionally, retrosomatic clefts are associated with contralateral spondylolysis (D). So (D) is true. Similar to spondylolysis, bilateral defects may predispose the patient to spinal instability, and the patients may present with low back pain and are not always asymptomatic (A). Thus (A) is false and the exception, and (A) is the correct answer.

Question 12-2. This question refers to a classic CT finding of a congenital spinal malformation. Specifically, an axial CT scan of the thoracic spine demonstrates a focal area of sagittal division of the spinal cord into 2 hemicords, which is termed “diastematomyelia” (B). Diastematomyelia is the result of a congenital fibrous or osseous spur. A retrosomatic cleft (A) is a bone defect in the vertebral pedicle that does not involve the spinal cord. Spina bifida occulta (E) is an isolated incomplete fusion of the posterior spinal elements that may be associated with a meningocele (C) or myelomeningocele (D), but the spinal cord is not split into 2 halves in these congenital malformations. Because diastematomyelia (B) is the correct diagnosis, (B) is the correct answer.

Question 12-3. This question alludes to the anatomic location of the pars interarticularis in a vertebra, which is between the inferior and superior vertebral facets (C). So (C) is the correct answer.

Question 12-4. This question is illustrated by a lateral radiograph of the lumbosacral spine of a 45-year-old man who has had intermittent low back pain since adolescence with increasing severity recently. A wide lucency is present in the region of the pars interarticularis. The L5 vertebral body is displaced anteriorly with relation to S1, but the spinal elements posterior to the pars interarticularis are not displaced anteriorly. The L5-S1 disc space demonstrates advanced degenerative changes. Anterolisthesis of L5 would not be present with a unilateral pars interarticularis defect (C) or lumbosacral spina bifida occulta (D). Tuberculous spondylitis (E) would not cause a pars interarticularis defect or degenerative disc disease at L5-S1. The posterior elements should move anteriorly with the vertebral body in degenerative spondylolisthesis (B). All of the radiographic findings in this patient are consistent with bilateral pars interarticularis defects with spondylolisthesis (A), which is the most likely diagnosis. So (A) is the correct answer.
Question 12-5. This question draws attention to the importance of identifying the “Scotty dog” sign on an oblique radiograph of the lumbar spine of an adolescent with chronic low back pain. The oblique view of the lumbar spine demonstrates important bony landmarks of a vertebra that give the appearance of a Scottish terrier. Specifically, the Scotty dog sign is caused by a linear defect or cleft in the pars interarticularis (D), representing spondylolysis. Certainly spondylolysis is a common cause of chronic low back pain in an adolescent. So (D) is the correct answer.

Question 12-6. This question draws attention to the most common location of spina bifida occulta (isolated incomplete fusion of the posterior bony spinal elements), which is the lumbosacral region (E). So (E) is the correct answer.

Question 12-7. This question brings attention to treatments of symptomatic unilateral spondylolysis, all of which should include conservative management such as rest (A), restriction of the exacerbating activity (B), back bracing (C), and physical therapy (D). So (A), (B), (C), and (D) are true. Aggressive surgical therapy, such as multilevel spinal fusion (E), is not indicated. Thus (E) is false and the exception, and (E) is the correct answer.

Question 12-8. This question concerns a clinical and radiographic vignette in which a 16-year-old male soccer player experienced intermittent chronic low back pain, unrelieved by aspirin. Plain film radiography of the lumbar spine revealed a stress reaction with sclerosis and hypertrophy of the right L5 pedicle. The presence of sclerosis and hypertrophy of the right L5 pedicle, particularly in an adolescent athlete, should prompt the diagnostic radiologist to search for a contralateral unilateral spondylolysis at L5 (B). Although an osteoid osteoma (C) can present as a dense mass in a vertebral pedicle, it should have a radiolucent nidus within it. The back pain associated with an osteoid osteoma usually is relieved by aspirin. Chronic osteonecrosis (D) and a hemangioma (E) in a vertebral pedicle may appear dense but should not cause hypertrophy of the involved pedicle. So a left, not a right (A), L5 unilateral spondylolysis (B) is the most likely diagnosis; and (B) is the correct answer.

Question 12-9. This question concerns the cause of a difference in the AP diameter of the spinal canal (1.3 cm at L4 and 1.7 cm at L5) noted on axial CT scans of a 25-year-old man with low back pain. This difference of the AP diameter of the spinal canal of apposing vertebra is called the “wide spinal canal” sign and is caused by posterior displacement of the posterior spinal elements. Of the options provided [i.e., spina bifida occulta (A), degenerative spondylolisthesis (B), bilateral pars interarticularis defects (C), unilateral retrosomatic cleft (D), and unilateral pars interarticularis defect (E)], only bilateral pars interarticularis defects (C) allow posterior displacement of the posterior spinal elements. So (C) is the most likely diagnosis, and (C) is the correct answer.

Question 12-10. This question refers to the anatomic location of spinal dysraphism, a congenital defect in a vertebra, which is the spinous process (E). So (E) is the correct answer.

**Answer Key for Volume 36 # 12:**

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