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Primary Vascular Neoplasms of the Spleen: Radiologic-Pathologic Correlation¹

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Primary vascular neoplasms of the spleen constitute the majority of non-hematolymphoid splenic tumors. The benign primary vascular tumors include hemangioma, hamartoma, and lymphangioma, whereas those of variable or uncertain biologic behavior include littoral cell angioma, hemangioendothelioma, and hemangiopericytoma. The primary malignant vascular neoplasm of the spleen is angiosarcoma. Peliosis is a rare lesion of unknown cause that is usually found incidentally in asymptomatic patients but may be associated with hematologic or metastatic disease. Although these vascular neoplasms of the spleen are uncommon, their importance lies in that they must be differentiated from the more common neoplastic disorders of the spleen, such as lymphoma and metastasis. The most common echogenic solid or complex cystic mass in an asymptomatic patient is splenic hemangioma. However, the imaging appearance of splenic hemangiomas may be complex, and differentiation of these lesions from malignant disease may not be possible. The diagnosis of splenic hamartoma may be suggested when findings of increased blood flow on color Doppler images are seen in association with a homogeneous solid echogenic mass. A large subcapsular solitary cystic abnormality discovered incidentally in a child in association with internal septations and tiny mural nodules favors the diagnosis of lymphangioma. Any invasion of the surrounding splenic parenchyma by a splenic lesion should indicate a more aggressive or malignant process. Evaluation of a focal splenic abnormality identified on sonograms should be followed up with computed tomography or magnetic resonance imaging with and without contrast material enhancement. Splenectomy may be required for definitive evaluation of a splenic mass with atypical features.

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Special Reviews. Noninvasive Imaging of Coronary Arteries: Current and Future Role of Multi-Detector Row CT¹

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While invasive imaging techniques, especially selective conventional coronary angiography, will remain vital to planning and guiding catheter-based and surgical treatment of significantly stenotic coronary lesions, the comprehensive and serial assessment of asymptomatic or minimally symptomatic stages of coronary artery disease (CAD) for preventive purposes will eventually need to rely on noninvasive imaging techniques. Cardiovascular imaging with tomographic modalities, including computed tomography (CT) and magnetic resonance imaging, has great potential for providing valuable information. This review article will describe the current and future role of cardiac CT, and in particular

that of multi-detector row CT, for imaging of atherosclerotic and other pathologic changes of the coronary arteries. It will describe how tomographic coronary imaging may eventually supplement traditional angiographic techniques in understanding the patterns of atherosclerotic CAD development.

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CT of Coronary Artery Disease¹

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The socioeconomic importance of heart disease provides considerable motivation for development of radiologic tools for noninvasive imaging of the coronary arteries. Current computed tomographic (CT) techniques combine high speed and spatial resolution with sophisticated electrocardiographic synchronization and robustness of use. Application of these modalities for evaluation of coronary artery disease is a topic of active current research. Coronary artery calcium measurements with different CT techniques have been used for determining the risk of coronary events, but the exact role of this marker for cardiac risk stratification remains unclear pending results of population-based studies. Contrast material-enhanced CT coronary angiography has become an established clinical indication for some scenarios (eg, coronary artery anomalies, bypass patency, surgical planning). With current technology, the accuracy of CT coronary angiography for detection of coro-

nary artery stenoses appears promising enough to warrant pursuit of this application, but sensitivity is still not high enough for routine diagnostic needs. The high negative predictive value of a normal CT coronary angiogram, however, may be useful for reliable exclusion of coronary artery stenosis. The cross-sectional nature of CT may allow noninvasive assessment of the coronary artery wall. Use of contrast-enhanced CT coronary angiography for detection, characterization, and quantification of atherosclerotic changes and total disease burden in coronary arteries as a potential tool for cardiac risk stratification is currently being investigated.

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Rectal Cancer: Review with Emphasis on MR Imaging¹

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One concern after rectal cancer surgery is the high local recurrence rate. Randomized trials have shown that the best local control rate for rectal cancer patients as a group is achieved after a short course of radiation therapy followed by optimal surgery. It is debatable, however, whether all patients with rectal cancer should undergo preoperative radiation therapy. Preoperative identification of those most likely to benefit from neoadjuvant therapy is important. Therefore, the challenge for preoperative imaging in rectal cancer is to determine subgroups of patients with different risks for recurrence: those with superficial tumors, who can be treated with surgery alone; those with operable tumors and a wide circumferential resection margin, who can be treated with a short course of radiation therapy followed by total mesorectal excision; and those with advanced cancer and a close or involved resection margin, who require a long course of radiation therapy, with or without chemotherapy, and extensive surgery. So far, there is no consensus on the

role of diagnostic imaging (endorectal ultrasonography, computed tomography, and magnetic resonance [MR] imaging) in the care of patients with primary rectal cancer. Preoperative staging has long relied on digital examination alone, which indicates that it has been difficult to achieve accuracy levels high enough for clinical decision making with preoperative imaging. In this review, the relevance of preoperative imaging in staging the local extent of primary rectal cancer will be discussed. Research on various imaging modalities, with an emphasis on MR, will be discussed under four main headings that address the most relevant aspects of local spread of rectal tumors: T stage, circumferential resection margin, locally advanced rectal cancer, and N stage.

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MR Procedures: Biologic Effects, Safety, and Patient Care¹

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The technology used for magnetic resonance (MR) procedures has evolved continuously during the past 20 years, yielding MR systems with stronger static magnetic fields, faster and stronger gradient magnetic fields, and more powerful radiofrequency transmission coils. Most reported cases of MR-related injuries and the few fatalities that have occurred have apparently been the result of failure to follow safety guidelines or of use of inappropriate or outdated information related to the safety aspects of biomedical implants and devices. To prevent accidents in the MR environment, therefore, it is necessary to revise information on biologic effects and safety according to changes that have occurred in

MR technology and with regard to current guidelines for biomedical implants and devices. This review provides an overview of and update on MR biologic effects, discusses new or controversial MR safety topics and issues, presents evidence-based guidelines to ensure safety for patients and staff, and describes safety information for various implants and devices that have recently undergone evaluation.

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