

Review

Multidetector CT and MRI findings in periportal space pathologies

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Abstract

Periportal region is an anatomic space around portal vein comprising hepatic artery, bile duct, nerves, lymphatics and a potential space. Periportal pathologies may involve any of these structures diffusely or focally with characteristic radiologic findings. Radiologic findings can be helpful in differential diagnosis of pathologies of periportal structures including periportal cavernomatous transformation, hepatic artery aneurysm, biliary diseases, neurofibromatosis, lymphoma, langerhans' cell histiocytosis, periportal fatty infiltration and other causes of periportal halo in adult and pediatric patients. Lobar/segmental intrahepatic involvement can be seen in neurofibromatosis, cavernomatous transformation, fatty infiltration and periportal edema. In this review, we discuss CT and MRI findings of periportal pathologies which can be in the form of diffuse or segmental/lobar involvement.

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1. Introduction

Periportal region is a frequently used term to describe pathologies around portal vein and its branches which has intrahepatic and extrahepatic parts. Hepatic artery branches, bile duct branches, autonomic nerves, lymphatics and a potential space are found within portal triad (Fig. 1). A variety of pathologies

can involve any of these structures with characteristic radiologic findings [1–9]. In this review, we illustrate CT and MRI findings of diffuse and segmental/lobar involvement of periportal pathologies.

2. Periportal pathologies

2.1. Pathologies of portal vein

Portal vein is the most prominent anatomic structure in the periportal space and portal vein pathologies are the most com-

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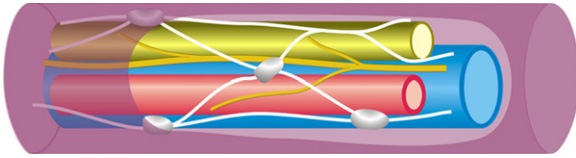


Fig. 1. Diagram shows portal vein (blue) and other structures in the periportal region including hepatic artery (red), bile duct (green), lymphatics (white) and nerves (yellow) (for interpretation of the references to color in this figure legend, the reader is referred to the web version of the article).

mon cause of periportal pathologies. Periportal cavernomatous transformation is a consequence of chronic portal vein thrombosis [1]. CT and MR findings show absence of portal vein and presence of small tortuous collateral venous structures at the periportal region (Fig. 2). Most of the time cavernomatous transformation involves both intra- and extrahepatic periportal regions. Sometimes segmental cavernomatous transformation can be seen as a result of isolated right or left portal vein thrombosis. Portal vein thrombosis can develop due to invasion of tumors and inflammation, which can involve segmental branches or rarely all-portal venous structures (Fig. 3) [1,2]. Hepatocellular carcinoma has a propensity to invade portal vein and



Fig. 2. (A and B) Forty-seven-year-old woman with periportal cavernomatous transformation due to chronic portal vein thrombosis. Axial CT images show absence of portal vein and collateral venous structures are seen in the periportal region. Biliary dilatation is seen which can be caused by compression of collateral veins. Note venous collaterals in gallbladder wall. (C and D) Forty-seven-year-old woman with intrahepatic periportal cavernomatous transformation due to intrahepatic portal vein thrombosis. Coronal MIP and axial CT images show patency of main portal vein and collateral veins in right (arrow) periportal space. Collaterals were absent in left periportal space.

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