PO-17

Immunohistochemistry for the Detection of Swine hepatitis E virus in the liver

Seung-Kwon Ha and Chan-hee Chae
Department of Veterinary Pathology, College of Veterinary Medicine and School of Agricultural Biotechnology, Seoul National University, Seoul, Republic of Korea

Introduction

Hepatitis E virus (HEV), previously referred to as enterically transmitted non-A, non-B hepatitis, is responsible for sporadic infections as well as large epidemics of acute viral hepatitis in developing countries. The disease generally affects young adults and reportedly has a mortality rate of up to 20% in infected pregnant women. HEV was once considered to be a member of the family *Caliciviridae*, but the unique genomic organization of HEV has led to the removal of HEV from the family and it was provisionally classified in an unassigned family of HEV-like viruses.

In situ hybridization provides any cellular detail and histological architecture.[1] However, use of in situ hybridization is largely restricted to the laboratories because this technique is the greater technical complexity and expense compared with immunohistochemistry. Therefore, the objective of this study is to develop the immunohistochemistry for the detection of swine HEV from formalin-fixed, paraffin-embedded hepatic tissues.

Materials and Methods

Thirty pigs (Nos. 1-30) from 30 different herds were selected on the basis of positive results for RT-PCR. The age of these 30 pigs was ranged from 60- to 114-day old. Polyclonal rabbit anti-human HEV antibody (Research Diagnostic Inc., Flanders, NJ USA) was used for immunohistochemistry.

Results

A distinct immunohistochemical staining for swine HEV was detected in all 30 pigs. A close cell-cell relation between adjacent serial sections from each of the 30 hepatic samples was confirmed by immunohistochemistry. Positive cells typically exhibited a red reaction product in the cytoplasm without any observable background staining. The signal intensity varied within and between anatomical structures in sections and between pigs.

Swine HEV antigen was consistently detected in liver from all 30 pigs tested. A strong immunohistochemical signal was seen within a variable number of hepatocytes in multifocal lobules. The immunohistochemical signal involves diffusely the majority of hepatocytes or is confined to foci of liver cells. At higher magnification, swine HEV antigen was localized to the cytoplasm of hepatocytes, with a slightly granular pattern of staining. No immunohistochemical signal was observed in degenerative hepatocytes.

Discussion

This study demonstrated that swine HEV antigen could consistently be demonstrated by immunohistochemical methods in hepatocytes. Intense and consistent immunohistochemical signals of swine HEV were demonstrated in normal hepatocytes but not degenerative hepatocytes. Since the degenerative hepatocytes were negative for swine HEV antigen, they may represent reactive changes in the hepatocytes secondary to swine HEV infection. This explanation is supported by observation that liver damage induced by HEV infection may be due to the immune response to the invading virus and may not be a direct cause of viral replication in hepatocytes.

References

1. **Choi, C., Chae, C.**, J. Hepatol. 2003. **38**, 827-832.