



Detection of bovine leptospiral nephritis by polymerase chain reaction and Levaditi-Manovelian staining

Hossein Nourani¹, Gholam Ali Kojouri², Hassan Momtaz³ and Nazanin Kalantari⁴

1Assistant Professor, Department of Pathobiology, School of Veterinary Medicine, Shahrekord University, Shahrekord, Iran, 2Associate Professor, Department of Clinical Science, School of Veterinary Medicine, Shahrekord University, Shahrekord, Iran, 3Assistant Professor, Department of Pathobiology, School of Veterinary Medicine, Islamic Azad University, Shahrekord, Iran, 4Graduated student, School of Veterinary Medicine, Shahrekord University, Shahrekord, Iran

Corresponding author's email: nourani_hossein@yahoo.com

Objectives: Leptospirosis is a zoonotic disease that occurs worldwide. It is an important disease of cattle because is responsible for abortions, stillbirths and acute septicemia. The present study was undertaken to compare the results of two methods, PCR and Levaditi Manovelian staining for diagnosis of leptospiral nephritis in cattle.

Materials & Methods: In this study, kidneys of 500 cattle were collected from Juneghan abattoir of Shahrekord, Iran and examined for the presence of lesions macroscopically. Tissue samples were taken from kidneys with gross lesions for PCR and histopathological study.

Results & Conclusion: Of 1000 examined kidneys, 113 (11.3%) had different macroscopic changes. PCR positive results and interstitial nephritis were seen in 42 and 57 of 113 kidneys with gross lesions, respectively. Leptospiral organisms were observed as long slender coiled or wavy shape only in one kidney by Levaditi Manovelian staining method. Histopathological examination of the kidney revealed epithelial cell necrosis and desquamation of renal tubules, severe mononuclear interstitial nephritis, hyaline casts formation in some renal tubules and peritubular fibrosis. The results of this study showed that PCR is more sensitive than Levaditi Manovelian staining method for diagnosis of bovine leptospiral nephritis.

Keywords: Interstitial nephritis, Levaditi Manovelian staining, PCR, cattle

Clinical leptospirosis and Leptospiremia in a cow

Mohsen Ghane, Vahideh Taghadosi, Saeed Nazifi

Department of Clinical Studies, School of Veterinary Medicine, Shiraz, Iran.

Corresponding author's email: mghanedvm@gmail.com

Objectives: Leptospirosis is an economically important zoonotic bacterial infection of livestock that may cause reproductive failure, loss of milk production, and can result in human infections. Leptospira invade the body after being deposited on mucous membranes or damaged skin. After a variable incubation period, leptospira circulate in the blood. During this period, leptospira enter and replicate in many tissues, including the liver, spleen, kidneys, reproductive tract, eyes, and central nervous system. Agglutinating antibodies can be detected in serum soon after the leptospira are in the bloodstream. Appearance of circulating antibodies coincides with the clearance of leptospira from blood and most organs.

Materials & Methods: Leptospira can remain in the kidney and urinary shedding may occur for weeks to many months after infection. therefore, the bacteria remain limited time in blood and diagnosis of disease with molecular techniques on blood samples is restricted. A cow with fever, anemia, inappetance, hematuria were referred to Shiraz veterinary clinic. In clinical examination no hematuria, but fever (40.9 °C), tachycardia, tachypnea, pale mucus membrane and decreased milk yield were observed. Anemia (PCV= 12), Basophilic stippling and leukopenia were indicated in hematological examinations. No blood parasite were seen in blood smear and blood parasite ruled out.

Results & Conclusion: Whole blood with anticoagulant were examined by nested PCR assay that detected all pathogenic and non pathogenic leptospira spp. 2 set of primers were designed based on a particular region of 16S rRNA gene of leptospira spp. 1st and 2nd amplification produced 525-bp and 289-bp sequences, respectively. Whole blood had leptospira genus and cattle were treated by penicillin and streptomycin for 5 days and clinical signs were disappeared 3 days after treatment. Herd and mentioned cow are looking out for new clinical signs and carrier animals.

Keywords: Clinical leptospirosis, Leptospiremia, Cattle