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Pathology and molecular comprehensive study of fowl adenovirus in broiler chicken in Basrah, Iraq

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Abstract

Viral diseases are a significant challenge facing the poultry industry, negatively impacting productivity and the agricultural economy. Among these viruses is fowl adenovirus (FAdV). The study aims to identify adenovirus in broilers in the Basrah province, Iraq. The study concentrated on clinical symptoms, postmortem lesions, histological abnormalities, and polymerase chain reaction (PCR) to validate a laboratory diagnosis. From October 2023 to April 2024, the present investigation collected 100 sick 10-day-old chickens from an unusual field in the Abu Sakhir district of Basrah. The poultry laboratory at the College of Veterinary Medicine, University of Basrah, handled the samples. Euthanized were chicks showing clinical symptoms. Every case was reviewed for gross lesions related to viscera. The livers of infected birds showed microhemorrhages or bruises with localized or diffuse areas of necrosis. The hearts showed a straw-coloured, diffuse fluid accumulation in the pericardial sac. The surface of the kidneys was enlarged and hemorrhagic. Microscopically, the liver exhibited basophilic intranuclear bodies, a necrotic area, and mononuclear cell infiltration. The heart showed vascular congestion in the pericardium, accompanied by inflammatory cell infiltration between the muscle fibres. Renal showed hemorrhage and degeneration of the epithelium, mononuclear cell infiltration and basophilic intranuclear bodies. PCR confirmed the presence of the adenovirus genome from infected birds.The study emphasizes the importance of early identification and accurate diagnosis to minimize the impact of FAdV on poultry health and productivity.

Keywords: fowl adenovirus; broilers; aviadenovirus; hexon gene; intranuclear inclusion bodies pathology

Introduction

Viral diseases are one of the significant challenges facing the poultry industry, negatively impacting productivity and the agricultural economy [1]. Among these viruses, fowl adenovirus (FAdV) stands out as one of the most significant pathogens causing substantial economic losses in the poultry sector, particularly in broiler chickens [2]. This virus is characterized by its ability to cause a wide range of diseases, including inclusion body hepatitis (IBH) hydropericardium hepatitis syndrome (HHS), which lead to increased mortality rates and decreased feed con-