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Clinical and Histopathological Observations of Turkey Hepatic Lipidosis in the Ain Touta Area (Algeria): A Preliminary Report

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ABSTRACT

Hepatic lipidosis of the Turkey is a syndrome described in turkey. The disease is rare, has appeared suddenly at the end of the breeding period. This study describes peculiar cases of hepatic lipidosis in Turkeys and the results of histopathological approaches aimed at better detailing this condition. Principal observed symptoms are nonchalance, prostration and sometimes a moderate diarrhea was observed. Careful necropsy examination revealed enlarged livers mottled by pale yellow areas. Histologically, the main noticed feature is fatty degeneration associated with necrosis and hemorrhages. The cause of hepatic lipidosis is still uncertain although nutritional and metabolic factors are suspected.

Key words: Algeria, clinic, hepatic lipidosis, histopathology, Turkey

INTRODUCTION

Some hepatic disorders characterized by fatty changes can affect avian species: e.g. fatty liver hemorrhagic syndrome, fatty liver and kidney syndromes are widely investigated and well documented in chickens (Leeson *et al.*, 1995; Crespo and Shivaprasad, 2003). In contrast, in Turkeys there is one hepatopathy known as hepatic lipidosis is poorly investigated by pathologists. This hepatic disorder is typically characterized by locally extensive areas of hepatocellular lipid accumulation (Gazdzinski *et al.*, 1994; Aziz, 2008). The cause of this pathological condition is uncertain and very few data are available (Gazdzinski *et al.*, 1994) describing this hepatopathy in turkey breeders of 12-24 weeks of age and hypothesize a possible role of nutritional restrictions in the onset of hepatic lipidosis. More recently, Gallazzi *et al.* (2007) and Aziz (2008) pointed out that hepatic lipidosis affects also meat type turkeys whose production is incompatible with diet restrictions. Therefore, the exact cause is still to be clarified and genetic components or exposure to a toxin has to be considered for the pathogenesis (Aziz, 2008).

Turkeys affected with this condition may die suddenly without preceding clinical signs, or they may exhibit signs of dyspnea and cyanosis shortly before death.

This study describes peculiar cases of hepatic lipidosis and the results of clinical, post mortem and liver histopathological examinations of affected broiler Turkeys.

MATERIALS AND METHODS

Area of study: The following study was carried out in Ain Touta (Batna) in the East of Algeria. This region is known by its high density of poultry houses and produce about 30% of the national egg production. A moderate mortality (5%) was observed in a turkey flock of 1000 animals in a turkey broiler house in Ain Touta (East of Algeria).

Clinical findings and post mortem examinations: This study was carried out on Turkey broiler house suffering from a moderate mortality (5%). The disease appeared suddenly at the end of the breeding period. Principal symptoms are nonchalance, prostration and sometimes a moderate diarrhea was observed. Clinical examination was extended to the necropsy examination of death and some euthanized broilers.

Gross and histopathological examinations: Dead birds which had been brought for diagnosis were given detailed post mortem examinations. Liver fragments were collected and immediately immersed in 10% buffered formalin to prevent autolysis and subsequent morphological changes. Tissues were washed to remove the formalin and dehydrated in increasing concentrations of ethanol followed by clearing and embedding using the xylene and paraffin wax respectively. Thin sections (6 μ m) were made and stained with Mayer's Hematoxylin and Eosin (H and E) according to the method described by Luna (1968) and Campbell (1995). All slides were carefully observed using the optic microscope (Axioskop 20; Carl Zeiss). Histopathological observations were performed at the laboratory of histology in the Department of Veterinary Medicine (University of Batna), Algeria.

RESULTS AND DISCUSSION

Gross pathology: On post-mortem examination, the birds are in good body condition with abundant visceral (abdominal) fat. The most consistent lesions are in the liver which is typically enlarged and its surface is mottled due to numerous hemorrhagic foci. Some livers have an irregularly shape, discrete or confluent pale areas that represent lipid accumulation (Fig. 1a-d) and no lesions have been found in the other organs.

The post mortem lesions observed during the present investigation were similar to those reported by Gazdzinski *et al.* (1994), Aziz (2008) and Manarolla *et al.* (2011).

Liver histopathology: Predominant microscopic lesions are massive necrosis of hepatocytes. Degenerative hepatocytes are shrunken and rounded and their nuclei may be pyknotic or karyorrhectic and finally lost and become anucleated dead hepatocytes. Enlarged hepatocytes are with a single, large vacuole that replaces the cytoplasm and peripherally displace and compressed the nucleus may be seen among the necrotic cells. There is no inflammatory response to the necrosis of hepatocytes (Fig. 2-5).



Fig. 1(a-d): Continue

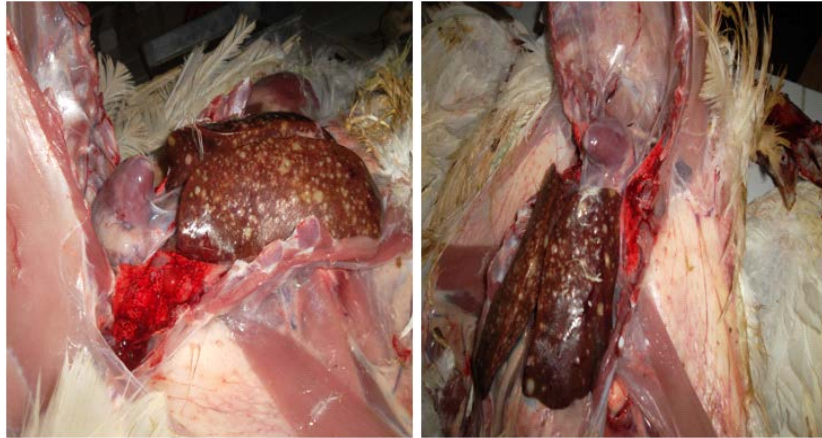


Fig. 1(a-d): Liver of a Turkey with hepatic lipidosis, Large, yellow areas indicate severe accumulation of lipids

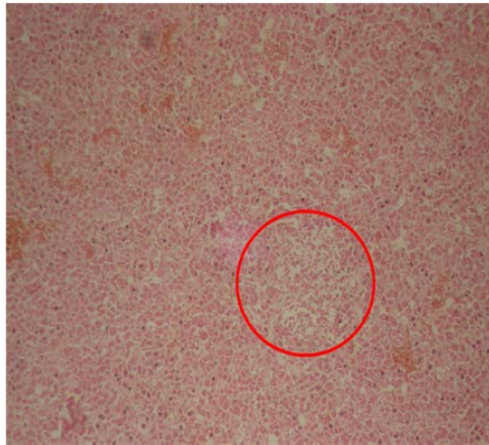


Fig. 2: Section of liver with hepatic necrosis (circle) (H and E, X100)

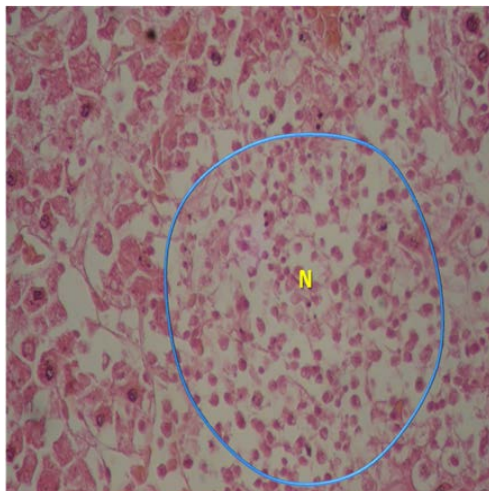


Fig. 3: Liver necrosis (N) (H and E, X400)

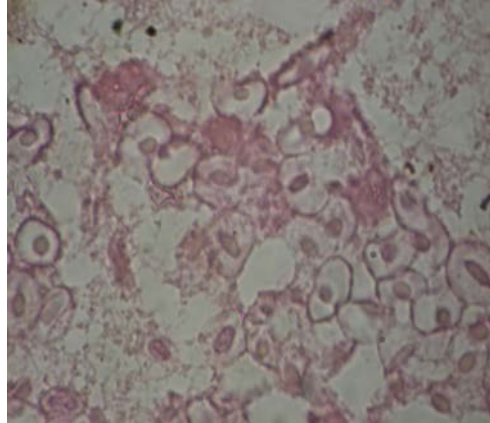


Fig. 4: Hepatic lipidosis with abnormal cell structure and extensive cell necrosis (H and E, X1000)

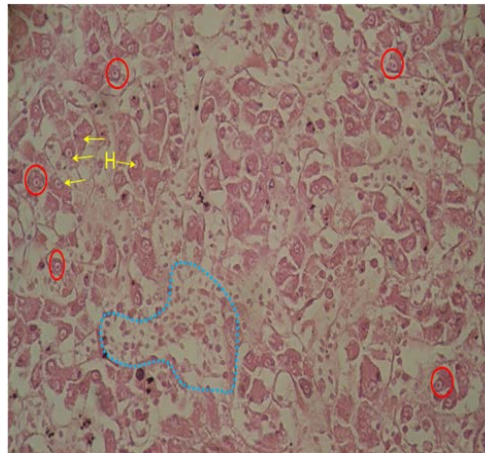


Fig. 5: Hepatic necrosis (blue shape). Hepatocytes (H) as well nucleus chromatin (circles) were shrunk (H and E, X400)

CONCLUSION

This study showed that the turkey is affected with uncommon diseases and still causing significant economic losses in turkey breeder candidates in many countries of the world. Therefore, more researches are needed to determine the exact cause and pathogenesis of this hepatic disorder and to investigate whether, it has any genetic components. Future research should primarily focused on investigating the possible effect of toxins in the onset of this turkey hepatic disorder.

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