

TOXICOLOGICAL PATHOLOGY OF AFLATOXIN B2 IN WILD PIGEON MAINLY IN NERVOUS, RESPIRATORY AND DIGESTIVE SYSTEM

Methaq A. Alrubaae..

Department of Pathology and Poultry Diseases, Veterinary Medicine College, Basrah,
Iraq

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Corresponding authormethaq2.rada@gmail.com:

ABSTRACT

The study was done on sixty bird divided equally into four groups, first group untreated control, second group low dose, third group intermediate dose and forth group high dose. The toxic effect of aflatoxin B2 in pigeon result in histopathological changes in digestive tract mainly interstitial edema in muscular layer of muscularis externa with prominent (thicken) muscularis externa, large blood vessels in the serosa with congestion perivascular fibrosis and prominent adipose tissue and elongation of villi of small intestine, vacuolation of ilet of Langerhans of pancreas. In the proventricullus, prominent lamina properia and focal congestion and dilated mucus gland of lamina properia. proventricullus with dilated mucous gland. In the respiratory system in lung areas of inflammatory cells in alveoli. In nervous system in brain with vacuolation in white matter.

INTRODUCTION

[1] study the effect of aflatoxin and fumonisin B1 on blood biochemical parameters in broilers. [2] did biochemical and histopathological analysis of aflatoxicosis in growing hens fed with commercial poultry feed. [3] Studied the pathologic effect of low grade aflatoxicity in broilers. Production of aflatoxin from aspergillus flavus and acute aflatoxicosis in young broiler chicks [4]. [5] study histopathological changes in broiler chicken feed aflatoxin and cyclo piazonic acid. [6] did biochemical and histopathological analysis of aflatoxins induced toxicity in liver and kidney of rat.[7] studied histopathological alteration in aflatoxicity and its amelioration with herbo - mineral toxin binder in broilers.[8] did histopathological study of quails liver experimentally induced by aflatoxin. Interaction of aflatoxin and/or *Salmonella haardt* on immunized pigeons [9]. [10] exposure of garden birds

to aflatoxin in britin. [11] did overview of aflatoxicosis of poultry.[12] did aflatoxin in poultry.[13] did effect of dilatory afladetox on performance in broiler.[14] effect of low level of aflatoxin on performance biochemical parameter and broiler liver tissue. [15] studied aflatoxin in effecting broiler performance immunity and gastro intestinal tract. Aim of the study is to find the toxic effect of aflatoxin B2 poisoning histopathological on respiratory , digestive and nervous system.

MATERIALS AND METHODS

Sixty wild caught pigeons brought from basrah local market treated with aflatoxin B2 by diet. The experiment was done on 4 groups (15 bird on each group). First group untreated control, second group low dose, third group intermediate dose and forth group high dose. The experiment was done by dietary administration that the mixing aflatoxin B2 with diet as 13 ml of 1 ppm of aflatoxin B2 in 250 g of feed. While untreated control were feed only normal grains. The experiment was done for 8 weeks. After that birds were sacrificed, tissue were taken from several internal organs including digestive, respiratory and nervous system. Then tissue were fixed in 10% neutral buffered formalin after fixation samples of tissue were taken impeded in paraffin and then paraffin blocks were made cut on microtome at 5m then slides were made and stained with (Hematoxylin and Eosin stain)

RESULT

Light microscopy of lung stained with H&E stain showed areas of inflammatory cells and dilated bronchi as in(fig1), with high magnification, areas of inflammatory cells, bronchus dilated filled with inflammatory cells and dilated alveoli (fig2). pancreas with mainly exocrine glandular structure (fig3). In (fig4, and fig 5) pancreas with focal congestion and periductal fibrosis. Proventricullus with prominent lamina properia and focal congestion and dilated mucus gland of lamina properia as were shown in (fig6 and fig 7). Small intestine with elongation of villi in(fig 8), interstitial edema in muscular layer of muscularis externa in(fig 9), interstitial edema in muscular layer of muscularis externa with prominent (thicken) muscularis externa in(fig 10) , congestion in the serosa in fig (11) and large blood vessels in the serosa with congestion perivesicular fibrosis and prominent adpose tissue in (fig 12). Brain

with vacuolation in white matter (fig 13 and fig 14). Stomach with dilated mucous gland (fig 15 and fig 16).

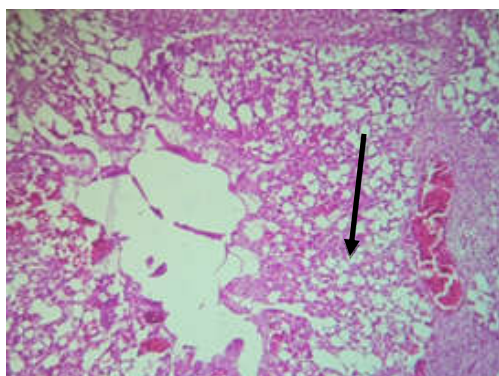


Fig1: lung with areas of inflammatory cells and dilated bronchi (10x)

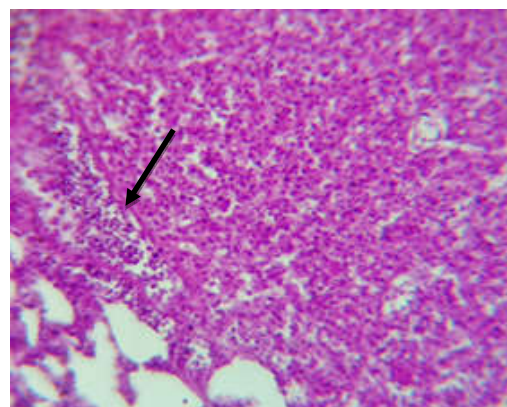


Fig 2: lung with areas of inflammatory cells, bronchus dilated filled with inflammatory cells and dilated alveoli arrow(40x)

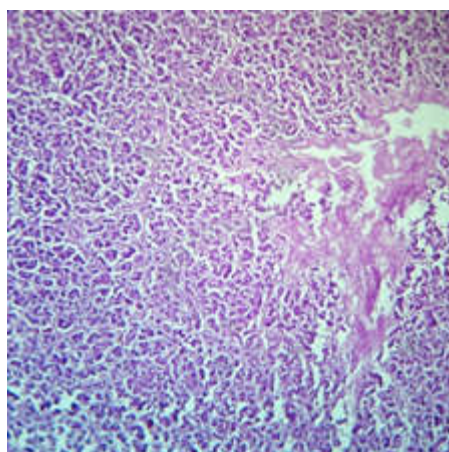


Fig 3: (normal) pancreas with mainly exocrine glandular structure (10x)

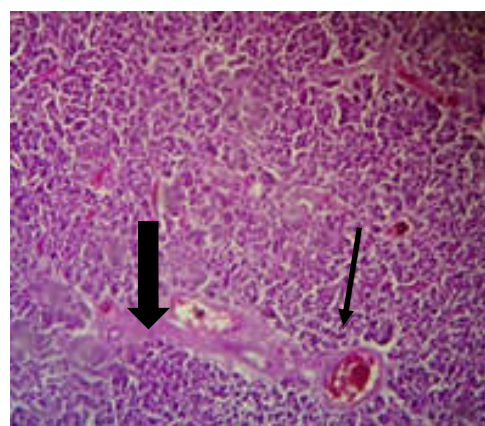


Fig 4: pancreas with focal congestion and periductal fibrosis arrows (10x)

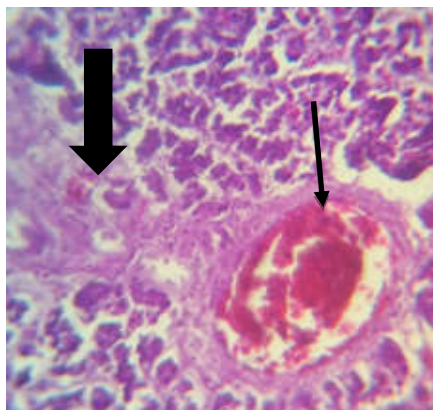


Fig 5: pancreas with focal congestion and periductal fibrosis (40x)

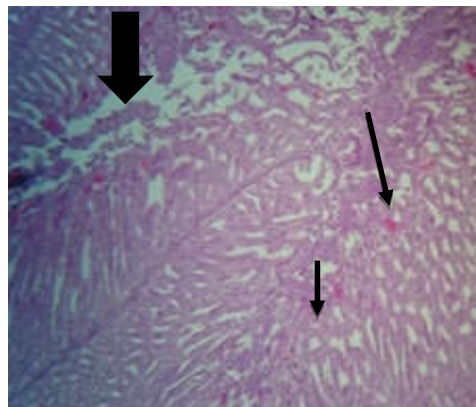


Fig 6: proventriculus with prominent lamina propria and focal congestion and dilated mucus gland of lamina propria (10x)

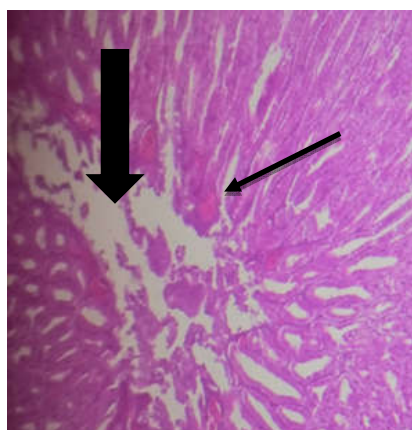


Fig7: prventricullus with promement lamina propria and focal congestion and dilated mucus gland of lamina propria(40x)

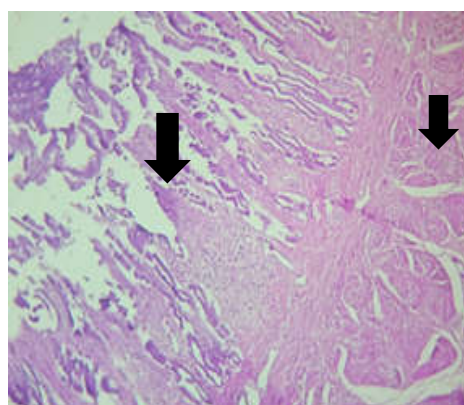


Fig 8: Small intestine with elongation of villi arrows (10x)

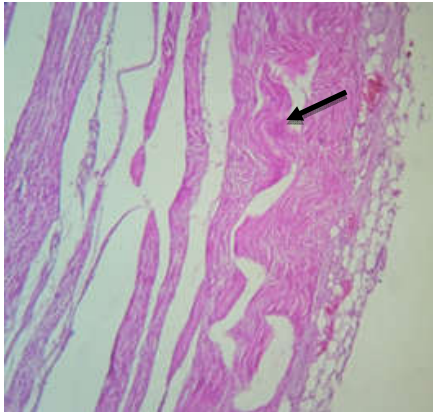


Fig 9: Small intestine with interstitial edema in muscular layer of muscularis externa arrow (10x)

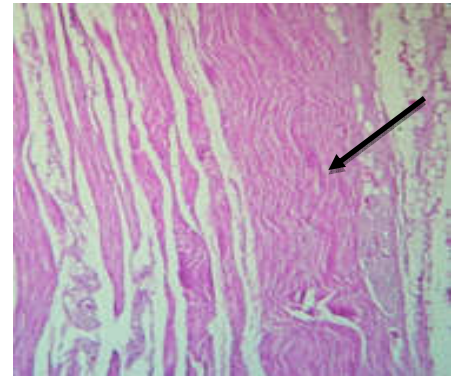


Fig 10: Small intestine with interstitial edema in muscular layer of muscularis externa with prominent (thickened) muscularis externa arrows (10x)

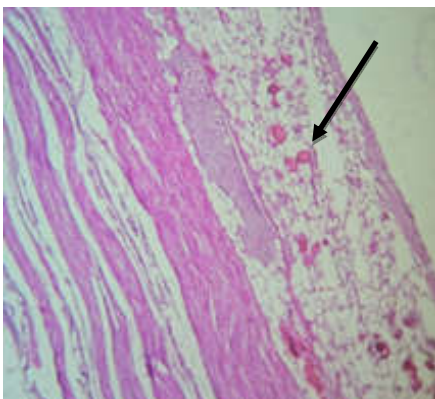


Fig 11: Small intestine with Congestion in the serosa arrow (10x)

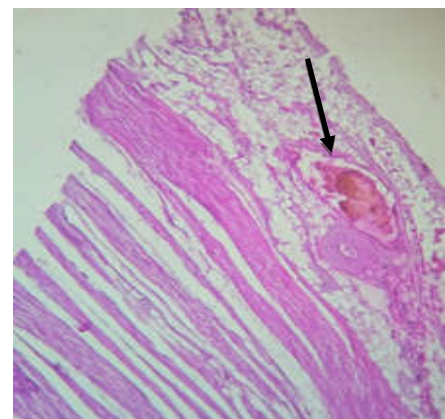


Fig 12: Small intestine with large blood vessels in the serosa with congestion perivesicular fibrosis and prominent adipose tissue arrow (10x)

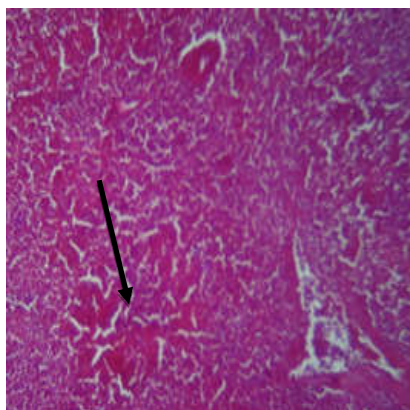


Fig 13: brain with vacuolation in white matter arrow (10x)

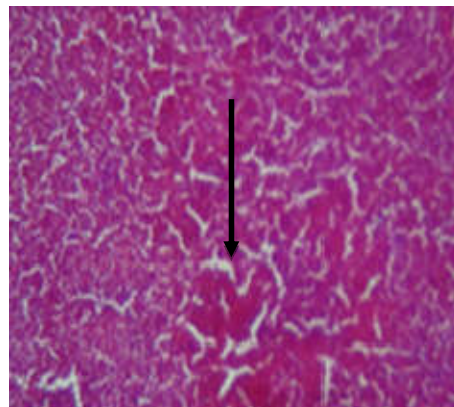


Fig 14: brain with vacuolation in white matter arrow (40x)

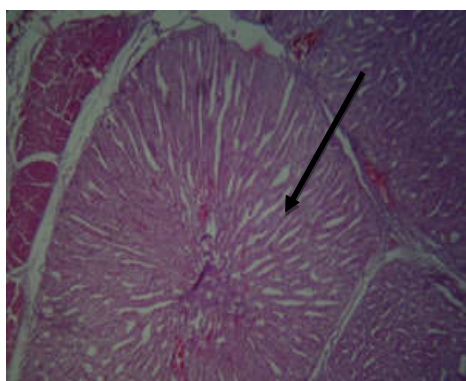


Fig 15: : proventricullus with dilated mucous gland arrow(10x)

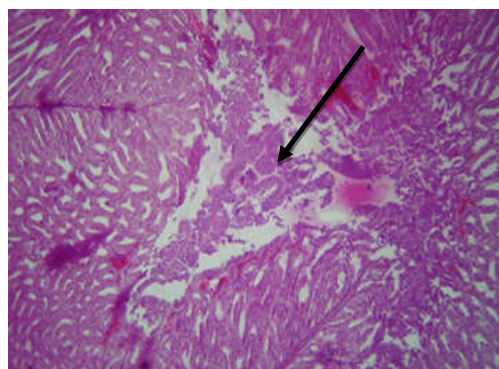


Fig 16: : proventricullus with dilated mucous gland arrow(40x)

DISCUSSION

[1] only did biochemical effect of aflatoxin, while the present research was castrated on the histopathological effect.[2] they studied biochemical and histopathological changes, the present study was mainly on histopathological changes on digestive tract, respiratory and nervous system but indicate that the aflatoxin B2 can induced pathological changes in different organs and system.[3]studied pathological changes in the lung induced by aflatoxin, the present study also found lesion induced by aflatoxinB2 in the lung.[4]in there study of aflatoxins from aspergellus flavus found lesion in different visceral organs. The present paper also found changes in different system such as digestive, respiratory and nervous system. [5] studied histopathological changes in the intestine, the present study also found histopathological lesions in digestive system, respiratory and nervous system.[6] did biochemical and histopathological toxicity of aflatoxin rats. The present paper was done on toxicity of aflatoxin B2 on various systems in pigeon in toxicated by aflatoxin B2.[7] in there study and histopathological alteration induced by aflatoxin in broiler.the present paper also found that aflatoxin can give lesions in different system such as respiratory, digestive and nervous system of birds in toxicated by aflatoxin B2.[8] found histopathological lesion in quail liver induced by aflatoxin. The present paper also found histopathological lesion in different system induced by aflatoxin in pigeon.[9] investigated the immune reaction of aflatoxin B1 and /or salmonella. The present paper concentrated mainly on histopathological lesion on different system induced by aflatoxin B2 in pigeons.[10] in the study on garden birds effected by aflatoxin in britin reported changes in the liver. The present paper also found various lesion in respiratory, digestive and nervous system induced by aflatoxin B2 in pigeon.[11] studied of aflatoxicosis in poultry. The present paper investigated the pathological lesions induced by aflatoxin in different system in pigeon.[12] studied the aflatoxin B1 and prevention in poultry. The present paper studied the histopathological lesion in different system induced by aflatoxin B2 in pigeon.[13] did effect of dilatory aflaDetox performance in broilers and reported histopathological changes in the liver. The present study found histopathological changes in different system induced by aflatoxin in pigeon.[14] in his biochemical and histopathological study on aflatoxin in broiler found changes in the liver. The present paper also found histopathological changes in digestive, respiratory, nervous system induced by aflatoxin B2 in pigeon.[15] did investigated performance immunity and gastro intestinal tract effected by aflatoxin in broiler. The present study also studied the histopathological lesion in digestive and respiratory in pigeons effected by aflatoxin B2.

Conclusions

Pigeons gave very good indication it can be good experimental model on aflatoxin poisoning.

التأثيرات الامراضية السامة للأفلاتوكسين B2 على الجهاز العصبي والجهاز التنفسي والهضمي في الحمام البري

ميثاق عبد الرضا الربيعي ..

فرع الامراض وامراض الدواجن ، كلية الطب البيطري ، البصرة ، العراق

الخلاصة

أجريت الدراسة على ستين طائر مقسمة بالتساوي إلى أربع مجاميع، المجموعة الأولى غير المعالجة السيطرة، المجموعة الثانية قليلة الجرعة ، المجموعة الثالثة متوسطة الجرعة والمجموعة الرابعة عالية الجرعة . التأثير السام للأفلاتوكسين B2 في الحمام نتجت عنه تغيرات نسيجية مرضية في الجهاز الهضمي بشكل رئيسي وذمة بينية في طبقة عضلية خارجية مع عضلات خارجية بارزة (مميّزة) ، أوعية دموية كبيرة في المصل مع احتقان في الأوعية المحيطة ووجود نسيج بارز واستطالة زغابات. الأمعاء الدقيقة ، وآفات تنكسية لجزر لانغرهانس للبنكرياس. في الصفيحة الظاهرة البارزة والغدية يوجد احتقان البؤري وتوسيع الغشاء المخاطي للصفيحة. اما المعدة فيكون الغشاء المخاطي متوسع. أما في الجهاز التنفسي في مناطق الرئة فيكون ارتشاح الخلايا الالتهابية في الحويصلات الهوائية. وفي الجهاز العصبي فأن الدماغ يحتوي على آفات تنكسية في المادة البيضاء.

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