

Pathological Studies On Some Tumors In Balady Breed At Sharkia Governorate

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ABSTRACT

The present work was done on 3 flocks of Balady chickens at Sharkia province . The chickens considered as cases of classical tumors with high incidence of mortality and marked crisis on the performance including low egg production and hatchability. By histopathological examination three types of tumors were recorded reticuloendotheliosis, nephroblastomas and teratomas .The rate of mortality was 8.1, 5.2 and 3.1 respectively. The study revealed that the tumors particularly reticuloendotheliosis causes economic loss by decreasing in egg production and hatchability in addition to high mortality rate.

INTRODUCTION

Tumor considered as a serious problems of poultry industry. In Egypt an increasing incidence of tumor mortality has been observed among broiler breeders, commercial layers as well as native chickens (1, 2). Lymphoid tumors including leukosis, Marek's disease and reticuloendotheliosis leads to economic loss due to increasing mortality and decreasing in egg production (3).

The reticuloendotheliosis is caused by Retro viruses of reticuloendotheliosis virus group unrelated to leukosis sarcoma. Viruses are present in nature as chronic form (4) . Avian nephroblastoma is renal tumor of both epithelial and mesenchymal cell types manifesting distorted morphology and abnormal differentiation (5). It caused by myeloblastosis - associated viruses (MAVs) derived from avian retroviruses (6). Teratomas are defined as germ cell origin neoplasms that can be rarely found in either humans or animals. Their most common localization is the gonads, although extragonadal localization has also been observed. In avian medicine, there is scarce literature about the occurrence of teratomas and their clinical implications, and this is mainly in wildlife birds (7). Ovarian teratomas (OTs) are the most common germ cell neoplasm. They include mature cystic teratomas, monodermal teratomas (neural tumors, struma ovarii, carcinoid tumors) and immature teratomas (8).

MATERIAL AND METHODS

The present work includes field cases observed in 3 flocks of balady chickens at sharkia province. The chickens considered as cases of classical tumors with high incidence of mortality and marked crisis on the performance including low egg production and hatchability. Post mortem examination was done on the freshly dead chicken for tumerized organs. Mortality rate and egg productions were recorded. Specimens from different organs were collected and fixed in 10% neutral formalin. Five micron thick parffine sections were done and stained with hematoxyline and eosin, (9).

RESULTS AND DISCUSSION

Three types of tumors were recorded in our work reticuloendotheliosis, nephroblastomas and teratomas. The tumors resulted in decreased egg production and hatchability (Table 1). In Egypt an increasing incidence of mortality due to tumors has been observed among native breeds and thus resulted in low egg production and hatchability, our results are consistent with those recorded by previous investigators (2).

The Pathological Findings

Reticuloendotheliosis

Liver

Grossly, nodular formation throughtout the parenchyma was seen. Microscopically, the hepatic tissue showed proliferative large

lymphoreticular cells, characterized by abundant cytoplasm with vesicular nuclei surrounding the central veins, portal blood vessels and under glissons capsule. The cells focally separated by strands of connective tissue. The cells were mostly around blood vessels. (Figs 1, 2.)

Spleen

Grossly, the spleen was enlarged with white nodules scattered all over the outer surface. Microscopically, the splenic tissue were completely replaced with proliferative pleomorphic lymphocytes (Fig 3). Mitotic activity was seen in the nuclei of the lymphocytes. Areas of proliferative uniform lymphoblast, brown to golden yellow extra or intra cellular pigments were observed. The proliferative large cells with vesicular nuclei and abundant cytoplasm (large lymphoreticular cells) and plasma cells were found.

Ovary

Grossly, the ovary was enlargement with diffuse inactive fleshy pale anemic nodular or couliflower like naked eye appearance. Microscopically, ovarian tissue showed diffuse pleomorphic lymphocytic cell proliferation which replaced most of the ovarian tissue. The lymphocytes revealed nuclear mitotic activity (Figs 4, 5). Couliflower ovaries showed tumor cells with flaccid and distorted ova (Fig.6). *Robinson and Twichaus (10)* mentioned that the liver was the most affected organ. *Nasser (4)* recorded that the main characteristic lesions of that disease were recorded in liver, sciatic nerve, kidney and proventriculus.

The differential pathological diagnosis of reticuloendotheliosis and Marek's disease was based on the presence of large lymphoreticular cells, characterized by abundant cytoplasm with vesicular nuclei and absence of pleomorphic lymphocyte populations, no changes were recorded in the brain and bursa of fabricius (4). The main deferential pathological diagnosis between reticuloendotheliosis and leukosis disease was the presence of uniform lymphoblastic

proliferation in leukosis and there was no lesions in ovary. *Fadly and Crittenden (11)*, mentioned that reticuloendotheliosis viruses were described as a unique type c virus different from avian leucosis viruses. *Witter (12)* reported that the acute reticulum cell neoplasia not known to occur in nature. The decreased in egg production in cases of reticuloendotheliosis is not only due to high mortality in the female but also due to ovarian tumors (13).

Nephroblastoma

Grossly, the kidney was enlarged with nodular areas. Microscopically, the renal tissue were replaced with a poorly differentiated cells of embryonic origin (blastemal cells) separated by fibrous connective tissue (Fig.7). Clusters of blastemal cells surrounded by prliferative stroma with cystic tubules (Fig.8) were observed. Hyperplasic blastema cells were seen in the renal tubules (Fig.9) some glomeruli and renal tubules were completely replaced with blasremal cells (Fig.10). Clusters of nondifferentiated blastema cells surrounded with immature connective tissue was observed (Fig.11). The same findings were cited previously recording the tumor nephroplastoma cells contained only blastomes (14). On the other side *Joliot et al (6)* mentioned that the tumor contains blastemal cells and cartilage. *Tsukamoto et al (15)* mentioned that all cases of nephroblastomas were composed of atypical tubular structures, blastemal cells, and fibrous stroma in varying degrees of differentiation.

Teratoma

A large mass composed of multiple tissue elements was observed in the abdominal cavity of a chicken. Microscopically, the mass consists of skin tissue, feathers, glands beside bone, cartilage and fat tissues (Figs. 12-16). Our result revealed that teratoma is a large mass composed of multiple tissue elements observed in the abdominal cavity of a chicken.

Microscopically, the mass consists of skin tissue, feather, glands, bone, cartilage and connective tissue. *Saba et al. (8)* mentioned that ovarian teratomas (OTs) are the most

common germ cell neoplasm. They include mature cystic teratomas, monodermal teratomas (neural tumors, stroma ovarii, carcinoid tumors) and immature teratomas. The egg production was decreased *Park et al.* (16) recorded that, ovarian teratomas can be associated with various complications and

demonstrate a wide spectrum of clinical and imaging features. The complications include torsion (16% of ovarian teratomas), rupture (1%–4%), malignant transformation (1%–2%), infection (1%), and autoimmune hemolytic anemia (<1%).

Table 1. Showing the effect of tumor- inducing diseases on production characters.

Tumor	Age of incidence /week	Cumulative mortality	Hatching eggs%	Hatchability %	Hen day Production%
Reticuloendotheliosis	26	8.1	77	70	63
Nephroblastoma	21	5.2	80	71	62
Teratoma	24	3.1	81	74	67

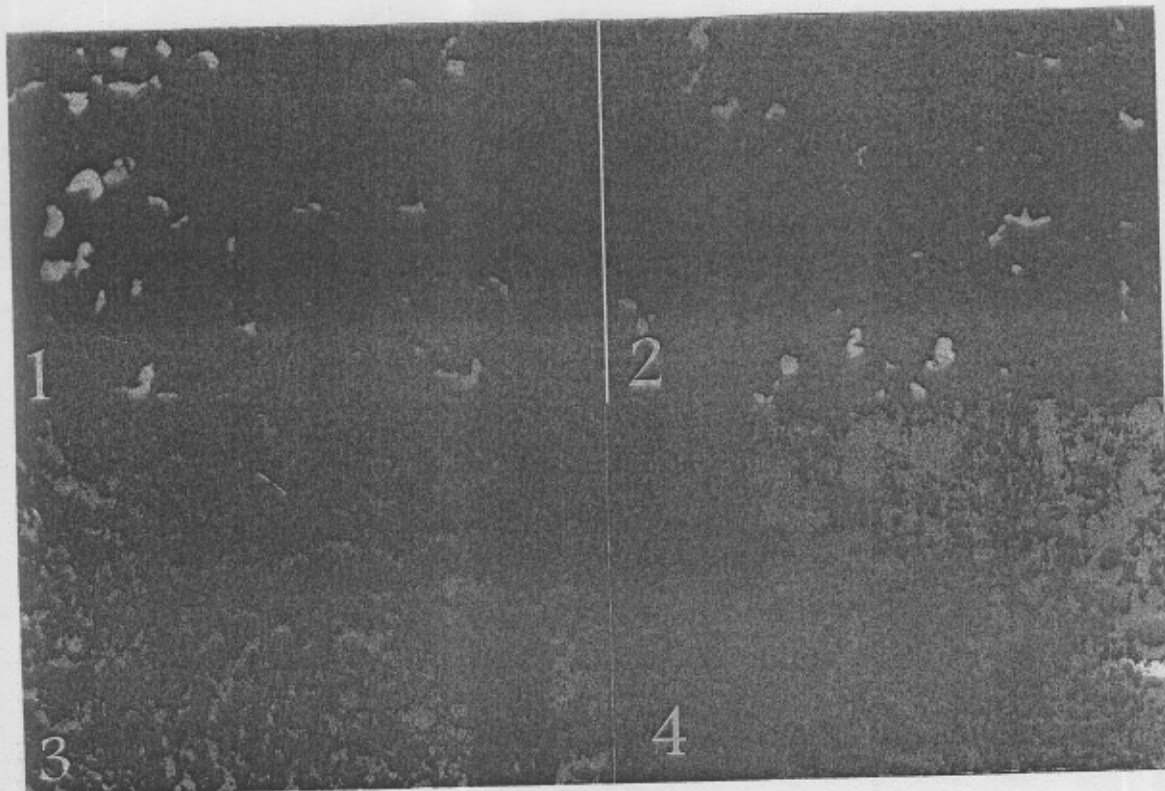


Fig.1. Photomicrograph of a sectioned liver, showing proliferative large lymphoreticular cells. H&EX600 .

Fig.2. Photomicrograph of a sectioned liver showing the tumor cells focally separated by strands of connective tissue and mostly around blood vessels H & E X 600.

Fig.3. Photomicrograph of a sectioned spleen showing the splenic tissue completely replaced with proliferative pleomorphic lymphocytes. H & E x300

Fig.4. Photomicrograph of a sectioned ovary showing diffuse pleomorphic lymphocytic cell proliferation which replaced most of the ovarian tissue . H & E x600

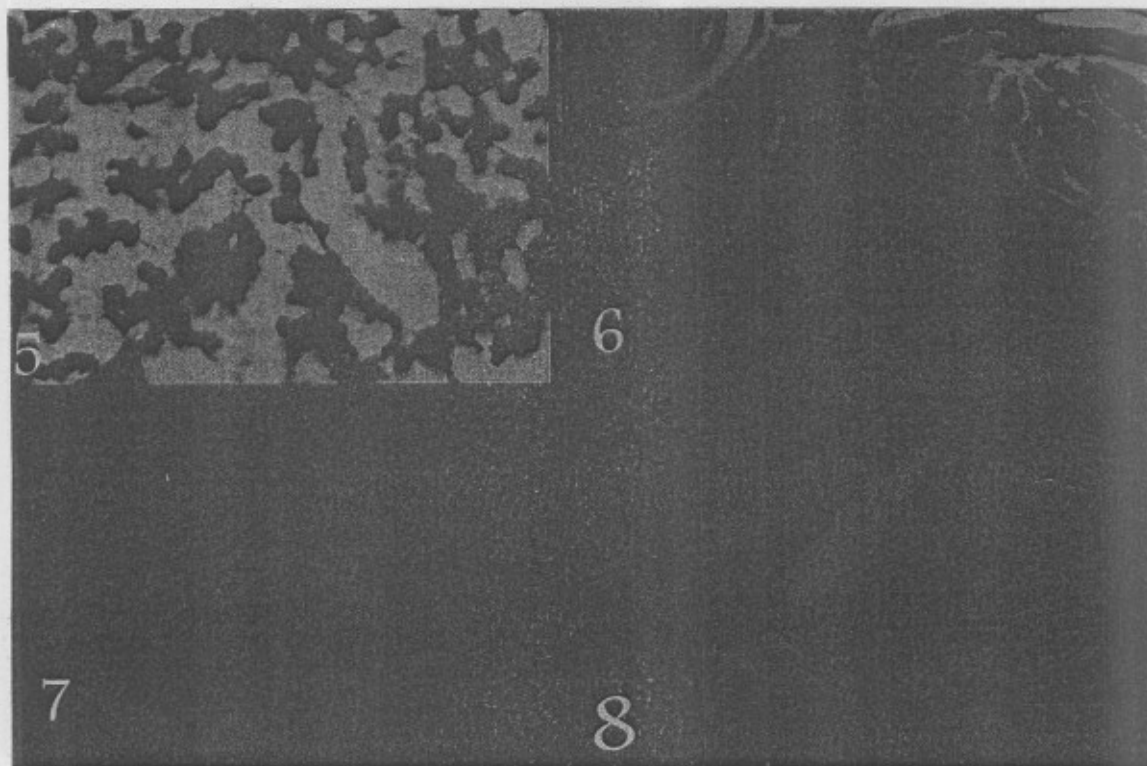


Fig.5 . Photomicrograph of a sectioned ovary showing the lymphocytes with nuclear mitotic activity. H&E x1200

Fig. 6. Photomicrograph of a sectioned couliflower ovary showing tumor cells with flaccid and distorted ova . H&Ex600

Fig. 7. Photomicrograph of a sectioned kidney, showing blastemal cells separated by fibrous connective tissue. H&EX300.

Fig. 8. Photomicrograph of a sectioned kidney, showing clusters of blastemal cells surrounded by prliferative stroma with cystic tubules. H&E x600

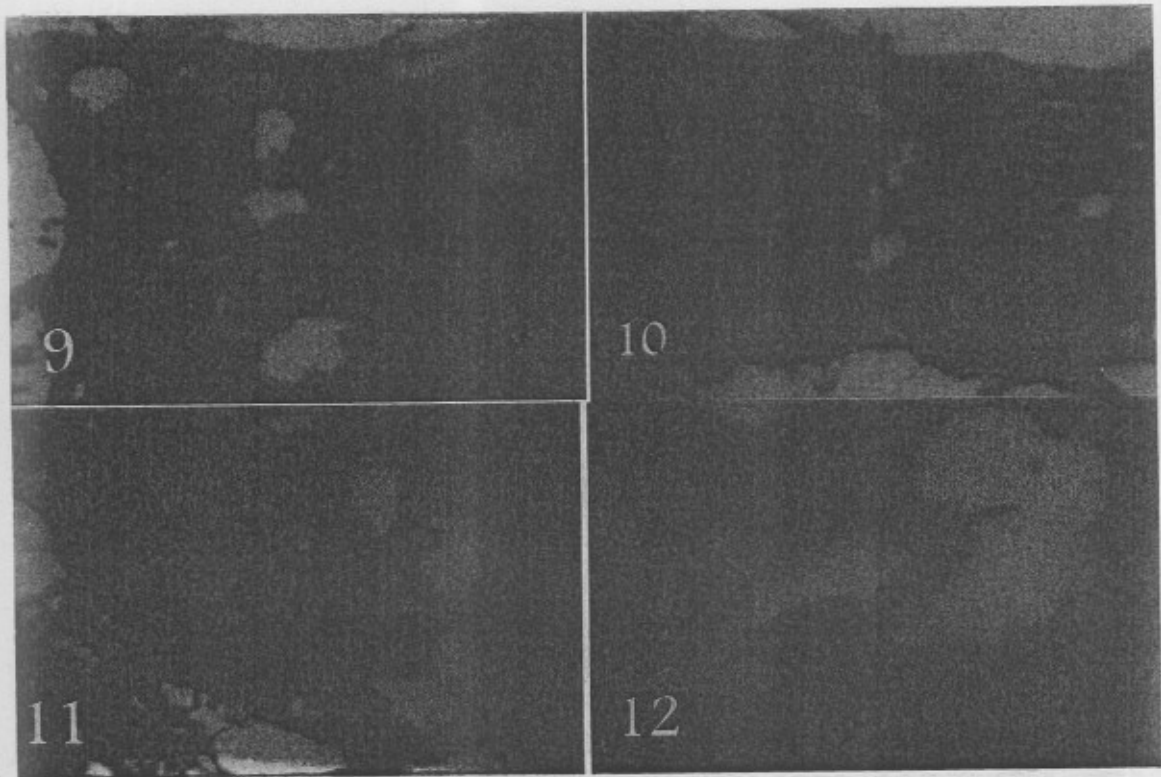


Fig .9. Photomicrograph of a sectioned kidney showing hyperplasic blastema cells of the renal tubules. H&Ex600

Fig.10. Photomicrograph of a sectioned kidney showing , complete replacing of some glomeruli and renal tubules with blasremal cells . H&E x600

Fig.11. Photomicrograph of a sectioned kidney showing, clusters of nondifferentiated blastema cells surrounded with immature connective tissue. H&E x600

Fig.12. Photomicrograph of a sectioned teratoma showing, skin tissue (glands and connective tissue) . H&E x 600

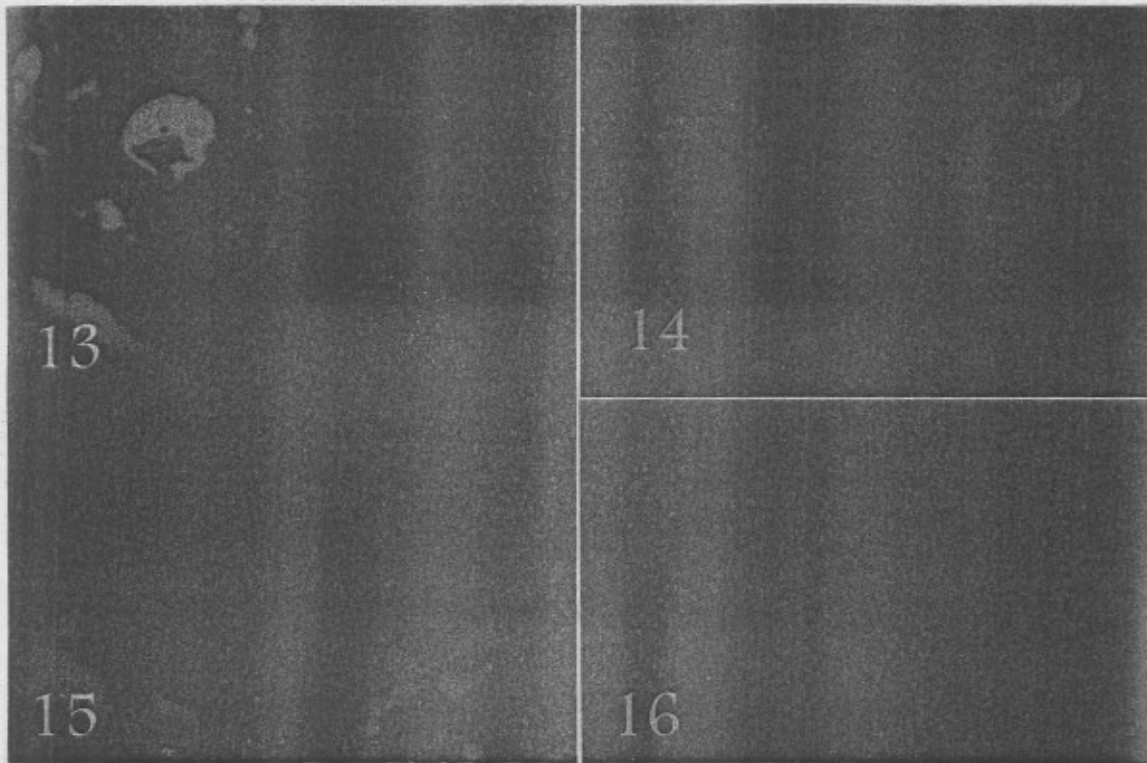


Fig.13. Photomicrograph of a sectioned teratoma showing feather structure. H&E x600 .

Fig 14. Photomicrograph of a sectioned teratoma showing bone structure . H&E x600.

Fig 15. Photomicrograph of a sectioned teratoma showing cartilage structure . H&E x600.

Fig.16. Photomicrograph of a sectioned teratoma showing ,fat tissues . H&E x600.

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الملخص العربي

دراسات باثولوجية على بعض الاورام السرطانية في الدجاج البلدى بمحافظة الشرقية

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تم إجراء البحث على عدد ٣ قطع أمهات من قطعان الفراخ البلدى بمحافظة الشرقية وكانت المزارع بها تاريخ إصابة بالسرطانات المختلفه، وقد أوضحت الصفة التشريحية والدراسة الهستوباثولوجية وجود ٣ انواع من السرطانات وهى الرتيكيولواندوثيليوزيس والنيفروبلاستوما والتيراتوما وكات نسبة الوفيات ٨٠,٥٢ ٣١,٥٢ على التوالي. وقد بينت الدراسة على مدى تأثير السرطانات المختلفه على نسبة انتاج البيض وعدم بلوغ القطيع إلى قمة الإنتاج المستهدفه وارتفاع نسبة النافق وانخفاض نسبة الفقس.

لذلك نرجو من المهتمين بصناعه الدواجن بان تكون الجدود والأمهات خاليه من كل الأمراض التى تنتقل عن طريق البيض من الأمهات المصابه إلى الكتاكيت.