شبكة المعلومات الجامعية

التوثيق الإلكتروني والميكروفيلم

بسم الله الرحمن الرحيم

HANAA ALY

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جامعة عين شمس

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قسم

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HANAA ALY

Cairo University
Faculty of Veterinary Medicine

Implementation of Digital Pathology in Diagnosis of Some Neoplastic Lesions in Pets

A thesis submitted by

Mawada Mohamed Ali
(B.V.Sc, Cairo University, 2017)

For The degree of the master
Pathology (General, Special and Postmortem)

Under supervision of

Prof. Dr. Iman Bakr Mohamed
Prof. of Pathology
Acting Dean
Faculty of Veterinary Medicine
Cairo University

Dr. Asmaa Khairy Al-Mokaddem
Lecturer of Pathology
Faculty of Veterinary Medicine
Cairo University

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Cairo University
Faculty of Veterinary Medicine
Department of Pathology

Supervision sheet

Prof. Dr. Iman Bakr Mohamed
Professor of Pathology,
Acting Dean
Faculty of Veterinary Medicine,
Cairo University.

Dr. Asmaa Khairy Al-Mokaddem
Lecturer of Pathology
Faculty of Veterinary Medicine,
Cairo University.

2021

Faculty of Veterinary Medicine
Department of Pathology

Name: Mawada Mohamed Ali
Date of birth: 21/7/1994
Nationality: Egyptian
Degree: Masters' of Vet. Med. Sciences
Specialization: Pathology (General, Special and Postmortem)
Title: Implementation of Digital Pathology in Diagnosis of Some Neoplastic Lesions in Pets

Supervisors:

Prof. Dr. Iman Bakr Shaheed	Professor of Pathology, Acting Dean, Faculty of Veterinary Medicine, Cairo University.
Dr. Asmaa Khairy Al-Mokaddem	Lecturer of Pathology, Faculty of Veterinary Medicine, Cairo University.

Abstract

Fifty-three (53) tumor samples were collected from pets' clinics in Cairo, Egypt for a year (Jan 2019-Jan 2020) to study their histological characters and to be used as a digital pathology (DP) module for teleconsulting and compare between light and virtual microscopy to validated virtual microscope use in primary diagnosis of pets affections. Tissue specimens were routinely prepared into slides and stained with hematoxylin and eosin (H&E) for histopathological examination. The 1st part of samples was 12 feline mammary glands tumor (FMT) the histological parameters of each sample were carefully identified, and the diagnosis of some samples was confirmed using special stains as Masson's trichrome (MTC) and immunohistochemical (IHC) staining as anti-cytokeratin CK8/18 and vimentin markers. Overall, the studied cases were heterogenic histologically and the most frequent histological pattern was tubulopapillary carcinoma. There were 3 rare mammary tumor cases; glycogen rich, mucinous and lipid rich carcinoma. All malignant samples were CK8/18 positive and one displayed growth of pleomorphic myoepithelial cells that was positive for vimentin marker. The 2nd part of samples was 12 canine mammary gland tumor (CMT), the frequently detected type was mixed tumors and the histologically predominant pattern was solid carcinoma. CMT samples with myoepithelial growth were confirmed by MTC, vimentin and P63 markers. Grading of CMT was done according to Elston and Ellis grading system. The last part of samples were 29 skin tumor masses. Five samples were of adnexal origin, 3 samples were basal cell carcinoma (BCC), 3 were papilloma, one was squamous cell carcinoma (SCC), 7 were round cell tumors of lymphoma and transmissible venereal tumor, 8 samples were soft tissue tumors and the last 2 remaining samples were hepatoid gland adenoma and carcinoma. MTC stain was used to stain fibrous tissue and vimentin IHC staining confirmed fibrosarcoma. Positive CD3 expression confirmed lymphoma. Peripheral nerve sheath tumor showed positive staining for glial fibrillary acidic protein (GFAP), vascular endothelial growth factor (VEGF) was used for hemangiosarcoma and both CK7 & CK14 for anal gland tumors. The glass slides of the previously diagnosed tumors were converted into whole slide images (WSI) and they were sent to several pathologists away from the glass slides. Overall, the pathologist agreed on the reliability and accuracy of the DP for 1ry diagnosis despite some addressed difficulties including the large size of images that made them hard to view on computers, changes in color display on LCD screens and loss of some details at high magnification powers. Generally, the benefits of such trial overcame the drawbacks confirming the reliability of DP in diagnosing histopathological affections of pets.

Keywords:
Canine tumors, Feline Tumors, Skin, Mammary gland, Histopathology, Digital pathology, Whole slide images.

Dedication

To my awesome father Mohamed and my lovely caring mother Naglaa,

To my loving family,

To my fiancé Mohamed and his family

And To my friends

Thanks a lot…

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