

The Lesion

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Editors

Dr R. Somvanshi
Dr K.P. Singh

From Editors Desk ...

The year 2020 is unique, unfortunate and unforgettable in the human history due to dreaded universal pandemic of Covid-19. Till date, it took very high toll of invaluable life of 146 thousand people and infected 10.1 million Indians. Country had total lock down for several weeks. Every sensible person beared mask, used sanitizer to disinfect hands, observed social distancing, totally confined in homes, all educational institutions and work places had shutdown, sick persons were quarantined, treated in Covid hospitals and whatnot. Country faced unexpected challenging laborer migration. Covid-19 pandemic changed our life drastically, affected world economy and by now its infection curve is significantly down in India. While writing these lines a new threat has emerged out in UK due to evolution and diagnosis of new strain of Covid-19 (VUI-2020 12/1 Strain) which is 70 per cent more infective due to mutation in spike protein. During this period vaccines were developed in different developed countries and India is getting vaccine soon and vaccination will begin.

During all this tough time, we are happy that activities of IAVP were not stand still. Before emergence of Covid-19 outbreak in India a grand IAVP Zonal Conference was organized in February, 2020 by Prof. M.K. Gupta at BAU, Ranchi, Jharkhand. It was followed by Webinars at SDAU, SK Nagar, RAJUVAS, Bikaner and in certain other parts of country. Last week of December is witnessing virtual International Veterinary Pathology Congress at Nagpur Veterinary College, MAFSU, Nagpur under leadership of dynamic Professor N.V. Kurkure. Biggest news of the year was joining of President, IAVP Dr B.N. Tripathi as Deputy Director General, Animal Sciences at ICAR Headquarters, New Delhi. IAVP is proud of his historical achievement and we are fortunate to work under his able leadership. Progress of IAVP is only possible due to certain dedicated, hardworking and dynamic IAVP Office Bearers; to mention a few name are-Dr M.R. Reddy, new Chief Editor, IJVP, Dr K.P. Singh, Secretary- General and Dr. M. Saminathan who are continuously working for cause of IAVP.

Dated: 25-12-2020
Place: Izatnagar, UP



Dr R. Somvanshi
Editor

IAVP President Dr B.N. Tripathi Joins as Deputy Director General Animal Science, ICAR

Dr B.N.Tripathi was born on 20 July, 1962, graduated from Veterinary College, Mathura (UP), now DUVAS, in 1984, and MVSc and PhD IVRI, Izatnagar (UP) in 1987 and 1990, respectively. Joined ARS services in 1990, served ICAR-NRC on Equines, Hisar, IVRI, Izatnagar, CSWRI, Avikanagar (as Head, Division of Animal Health) and Director, NIAH, Govt. of India (2012-2014) before joining at ICAR-National Research Centre on Equines as the 5th Director on 20th August, 2014. Under his leadership on 25th July, 2015, NRCE received Sardar Patel Outstanding ICAR Institution Award. Dr Tripathi has worked extensively on pathology and diagnosis of infectious diseases, has published about 125 original research papers in National and International journals, three books, one manual and edited three Conference Proceedings. He has made pioneering contributions on molecular pathogenesis and diagnosis of Johne's disease. He has been granted one patent. Dr Tripathi is on the faculty of Veterinary Pathology (IVRI since 1993) and has guided 13 Postgraduate students. He has visited a number of countries viz. Denmark, Australia, Japan and Bhutan for post-doctoral research and for presenting his research papers in conferences. His scientific and research contributions have been duly recognized by several awards (Best Teacher Award of the IVRI, Drs Jain and Vegad Outstanding Pathologist Award, International Wellcome Trust Fellowship (London), Best Research Paper Awards of IAVP, Best PhD Thesis Award for his student, etc., and Fellowships of five science academies (FNAVS, FIAVP, FSIIP and FISVIB). He is Diplomate of ICVP during 2008 after having passed the certification examination conducted by Indian College of Veterinary Pathologists (ICVP). Dr Tripathi has served as Chief Editor of Indian Journal of Veterinary Pathology and IAVP Newsletter The Lesion, Secretary, ICVP (2012-14) and Secretary General, IAVP. Presently he is President, IAVP. He joined as Deputy Director General Animal Science (ICAR) on 30-1-2020. **IAVP and whole Indian Veterinary Pathology fraternity congratulates him for selection as DDGAS, ICAR and wishes him all success for the most coveted assignment.**



Online International Veterinary Pathology Congress-2020

Online International Veterinary Pathology Congress-2020, XXXVII Annual Conference of Indian Association of Veterinary Pathologists, XI Annual Meeting of Indian College of Veterinary Pathologists and International Symposium on “Role of veterinary pathology in controlling emerging and re-emerging diseases of livestock and poultry: An one health approach” will held w.e.f. 26 to 29 December, 2020 at Nagpur Veterinary College, Maharashtra Animal and Fishery Sciences University, Nagpur, Maharashtra.



Chief Patron

Dr (Prof.) A.M. Paturkar, Vice Chancellor, MAFSU, Nagpur



Chairman

Dr A.P. Somkuvar, Director of Instructions and Dean, MAFSU, Nagpur



Co-Chairman

Dr S.B. Kawitkar, Associate Dean, Nagpur Veterinary College, Nagpur



Organising Secretary

Dr N.V. Kurkure, Professor & Head, Department of Veterinary Pathology, NVC, Nagpur



Joint Organising Secretaries

Dr Madhuri Hedau, Assistant Professor, Department of Veterinary Pathology, NVC, Nagpur

Dr Megha Kaore, Assistant Professor, Department of Veterinary Pathology, NVC, Nagpur

Treasurer

Dr Sandeep Chaudhary, Nagpur Veterinary College, Nagpur

About the Host

Nagpur Veterinary College has been established on 1st July, 1958 is the constituent college of Maharashtra Animal and Fishery Sciences University (MAFSU), Nagpur and catering the demand of trained veterinary human resource since last sixty years. The Department of Veterinary Pathology at Nagpur Veterinary College came into existence in July, 1958. The master's courses started from October, 2002 onwards, with intake

capacity of two and from 2012 Doctoral courses were started. Till now 27 students have successfully completed MVSc while five completed PhD. The Department is actively engaged in teaching, research and extension activities. It has successfully implemented extramural research projects and is well equipped with state of the art facilities for histopathology, molecular diagnosis, cell culture, virus and bacterial isolation. The Department is presently having one ongoing project and has completed four externally funded projects.

About Nagpur

Nagpur is the second capital and the third largest city of Indian state of Maharashtra. It derives unique importance from being the headquarters for the RSS and is also known for Deekshabhoomi, the largest hollow stupa among all the Buddhist stupas in the world. Famous for oranges, it is also known as the Orange City for being a major trade centre of oranges. Truly known as 'Tiger Capital' out of total 39 tiger reserve in the country, Vidharba hold about 13 tiger reserves. The place is well connected with rail, road and air from all major places.

Meet Your Organizing Secretary: Professor N. V. Kurkure

Dr Nitin Vasantrao Kurkure, is presently working as Professor of Veterinary Pathology at Nagpur Veterinary College, Maharashtra Animal & Fishery Sciences University, Nagpur. He was born on 7th June, 1967 at Chalisgaon, Jalgaon district Maharashtra. He completed his BVSc & AH and MVSc (Veterinary Pathology) degrees in 1989 and 1991, respectively, from Panjabrao Krishi Vidyappeth, Akola. He obtained his PhD degree from Maharashtra Animal & Fishery Sciences University, Nagpur in 2003. He is Diplomat of Indian College of Veterinary Pathology. His areas of research in masters and doctoral programmes were on pesticide and ochratoxin A, induced pathology in chickens, respectively. He has significantly contributed for more than 28 years in the field of Veterinary Pathology especially in the area of mycotoxicosis, avian diseases, listeriosis in farm animals and cancers in dogs in which he has made notable contributions. He is specialist in avian disease investigation and diagnosis making significant contributions and has distinction of recording a variant strain of avian viruses circulating in central India. Present area of focus is tackling antimicrobial resistance in poultry. Dr Nitin Kurkure is very popular among the undergraduate and post graduate students. He has so far guided 12 MVSc and 1 PhD students in the discipline of Veterinary Pathology. Dr Kurkure has received 12 awards from various national and international organizations. These awards include Young Scientist Award of Indian Association of Veterinary Pathologists and Society for Immunology and Immunopathology, Indian Association for the Advancement of Veterinary Research; twice University Best Teacher Award; IAVP-Varsha Awards for outstanding contributions in Avian Pathology and Animal Pathology; Dr C.M. Award for best article published in IJVP; Department of Biotechnology CREST Fellowship and a number of best poster awards in various symposium. Dr Nitin Kurkure, served as Visiting Professor at Chonnam National University, South Korea for one year and obtained six-month training at Veterinary Laboratory Agency, New Haw, UK. He is reviewer of research articles for 11 international research journals of repute. He was Principal Investigator of five extramural research projects. He has published 148 research papers in national and international journals of repute, one book and contributed 6 chapters in books published by CABI. He has organised two National Symposiums till date. Dr Nitin Kurkure is very polite, friendly, cooperative, hardworking and very conversant in various facets of his discipline.



Dr Jasmi G. Patel, Assistant Professor, Department of Pathology, Veterinary College, SDAU, Sardarkrushinagar, Gujarat received Best PhD Thesis Award by Gujarat Association for Agricultural Sciences. She did her doctoral research on "Metagenomic and culture based analysis of respiratory disease complex in poultry" under the able guidance of Dr B.J. Patel, Professor & Head, Department of Pathology, College of Veterinary Science and Animal Husbandry, SDAU, Sardarkrushinagar, Gujarat. **IAVP Congratulates both student and supervisor for this significant achievement.**

Awards/Honours



Chronic Subcutaneous Emphysema in a Parrot (*Psittacula krameri*)

Palanivelu, M.¹; Mahendran, K.²; Plabita Goswamy²; Kavitha, K.²; Asok Kumar, M.¹ and R. Singh¹

¹Division of Pathology, ICAR-Indian Veterinary Research Institute, Izatnagar, UP 243 122

On 19th December, 2019, a family of Bareilly approached to Avian Diseases Section, Division of Pathology, ICAR-IVRI, Izatnagar, UP with its male parrot, aged 1 year (OPD-6787) with lingering illness of oversized puffed up multiple subcutaneous soft swelling around the neck and chest. During recording history, the family members explained that their pet has been suffering with the present condition for last 4 months; gradually losing weight; remained dull all the time with little movement and taking food with difficulty. Before coming to IVRI, the owners consulted local veterinarians but did not find any solution to cure the suffering of the pet. Clinical examination by palpation revealed accumulation of gas in the subcutaneous space. With consent from the client, the case was taken to Referral Veterinary Polyclinic for radiography to rule out any lesions in thoraco-abdominal organs and subcutaneous connective tissues. Radiographic examination revealed no abnormality in the thoracic and abdominal organs; however, mild radiopaque lesions were noticed on subcutaneous tissues adjacent to thoracic airsacs, which suggested tearing of the supporting tissues of the thoracic air sacs. On the basis of clinical examination, history and radiography, the case was diagnosed as chronic subcutaneous emphysema. Subcutaneous emphysema is a normal physiologic condition in certain avian species such as pelicans; however, in this parrot it is a rare pathological condition which may be due to tearing of the muscles or connective tissue supporting the air sacs or tearing of the air sacs. It is known that unlike mammals, birds have wide spread pulmonary system and breathe through air sacs (integral part of flying capability of birds) spanning in the thorax and the abdomen, which are filled and emptied in two cycles of each breathe. The supporting structures (muscles and connective tissue) of air sacs when get ruptured or weakened due to trauma or nutritional deficiency, allows escape of air from the air sac to accumulate under the skin tissue. Although most cases of avian subcutaneous emphysema are not life-threatening, it can cause discomfort to the affected bird, and can adversely affect the bird's quality of life and immune status. Expelling the gas by needle suction can temporarily relieve the condition but can reoccur until the underlying tissue damage is corrected. Use of Teflon stent has been encouraged as a means to reduce the buildup of air under the skin. Therefore, it was decided to do simple sterile needle suction to relieve the gas. The owner agreed with advice and line of treatment. The air was expelled by an 18 gauge sterile needle and the parrot regained its normal appearance. In addition, to prevent further recurrence, bird was prescribed certain medicines (Doxycycline @ 30 mg/kg/day per os, multivitamin and mineral supplement) for countering infection, if any and healing of the supporting torn tissue. Before the departure owners were cautioned that they should not worry, if the same condition shows its recurrence. In spite of this, if air accumulates again in the area then the use of Teflon stent could be recommended to reduce the buildup of air under the skin. The family did not turn up again.



Parrot: Ballooning of skin over thorax and neck before treatment

Parrot: After deflation of ballooned skin with sterile needle

Parrot: X-ray image of full body showing thinning of subcutaneous tissues (arrow) and radiopaque area of gas. **Hand bones of owner holding the parrot are also visible.

²Division of Medicine

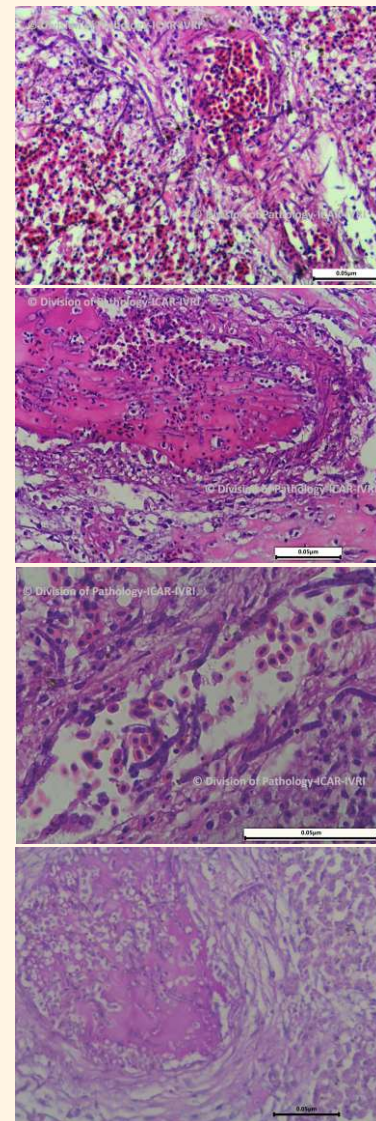
Angio-Invasive Aspergillosis in a Desi Chicken

Asok Kumar, M., Palanivelu, M., Karikalan, M. and K. Dhama

Division of Pathology, ICAR-Indian Veterinary Research Institute, Izatnagar, Bareilly, UP

A desi fowl was brought for necropsy examination to the Division of Pathology, ICAR-IVRI, Izatnagar, UP. The condition of the carcass was fair. There was catarrhal exudate coming out from the nasal cavity. Upon removal of the keel bone, the lungs revealed multifocal areas of consolidation with associated pleuritis. The consolidated areas were hard in consistency. The consolidated regions were seen embedded in the parenchyma. The trachea revealed serosal congestion and mild catarrhal exudate in the lumen. The thoracic airsacs were cloudy and thickened. Histopathological examination of the lung sections revealed multi focal to focally extensive areas of tissue necrosis with colonies of fungal hyphae amidst infiltration by heterophils and lymphocytes. Acutely branching fungal hyphae septate were found at the periphery of necrotic tissue. Surprisingly, no granulomatous lesions were observed. Many blood vessels in the lung parenchyma exhibited invasion of fungal hyphae on to the vessel wall into the vascular lumen (Fig.1). Several blood vessels were thrombosed (Fig. 2) with typical perivasculitis and parenchymal necrosis. The vessel wall contained growth of fungal hyphae involving all the layers of the vessels (Fig. 3). PAS staining confirmed the presence of fungal hyphae inside the blood vessel with associated thrombosis (Fig. 4). The histopathological findings were suggestive of angio-invasive Aspergillosis.

Fig. 1: Presence of fungal hyphae invading the blood vessel; **Fig. 2:** Presence of fungal hyphae in the blood vessel lumen with associated thrombosis and vasculitis; **Fig. 3:** Presence of fungal hyphae in the blood vessel wall and also inside the lumen; **Fig. 4:** Presence of fungal hyphae in the blood vessel lumen with associated thrombosis. PAS staining.



Is fine needle aspiration cytology (FNAC) buddy or foe for diagnosis of canine mammary tumour?

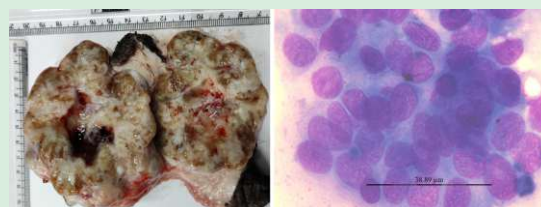
M. Saminathan, A.T. Faslu Rahman and K.P. Singh

Division of Pathology, ICAR-Indian Veterinary Research Institute, Izatnagar, Bareilly, UP

FNAC had become an important diagnostic component in clinical pathology. Mostly (60%; 15/25), cut sections of canine mammary tumours (CMTs) have several fluid-filled cystic cavities of variable sizes with clear or turbid or mucinous and red-brown fluid. During FNAC, about 10 ml of fluid comes in syringe from these tumours. This fluid is not sufficient for cytological diagnosis of CMTs and hampers the diagnostic accuracy. Hence, FNAC is foe for diagnosis of cystic CMTs. Among spontaneous mammary tumours in dogs, 40% (10/25) were solid mammary tumours. During FNAC, these tumours exfoliated well and revealed the epithelial cells that are arranged in sheets and clusters. Hence, FNAC is buddy for diagnosis of solid CMTs without cystic cavities because of improved cytological diagnosis of CMTs.



FNAC is foe for diagnosis of cystic CMTs



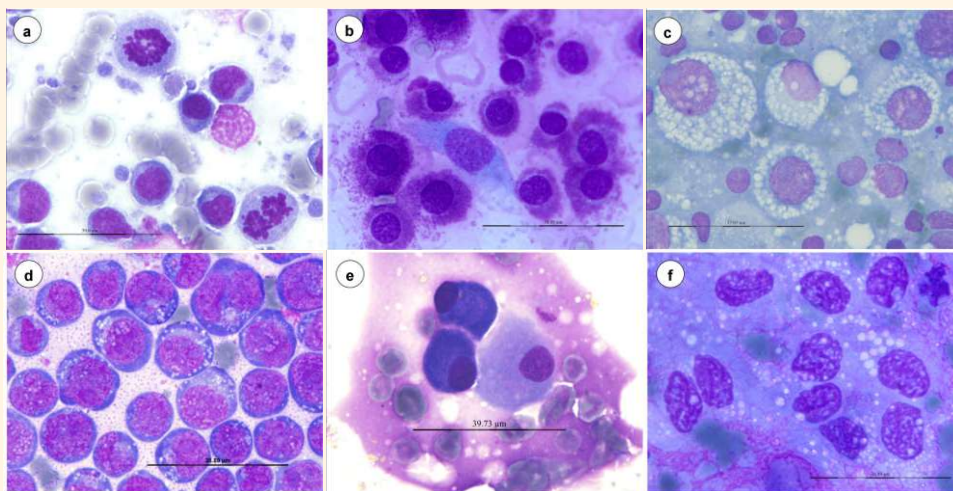
FNAC is buddy for diagnosis of solid CMTs

Fascinating Science and Art of Cytological Diagnosis of Cancers!

M. Saminathan, A.T. Faslu Rahman and K.P. Singh

Division of Pathology, ICAR-Indian Veterinary Research Institute, Izatnagar, Bareilly, UP

Cytology is a fascinating science and art for diagnosis of cancers. Specific features of few tumours are : **a. Lymphoblastic Lymphoma:** Pleomorphic lymphoblasts with high mitotic activity and indistinct nucleoli. Lymphoblast showed scant basophilic cytoplasm. **b. Mast Cell Tumour:** Individualized mast cells contain abundant purple metachromatic granules. Cells are uniform in size and one reactive fibroblast (center) is present. **c. Transmissible Venereal Tumor (TVT):** Monomorphic population of large, round cells and cytoplasm contains characteristic coarse and clear vacuoles. **d. Histiocytic Sarcoma:** Individualized cells with marked anisocytosis, anisokaryosis, binucleation, hyperchromasia, prominent nucleoli and vacuolated cytoplasm. **e. Osteosarcoma:** Three osteoblasts with an eccentrically placed nucleus and prominent Golgi apparatus. **f. Prostatic Carcinoma:** Anisokaryosis, coarse nuclear chromatin, prominent nucleoli, cytoplasmic vacuoles and pink secretory material in the background. Fine needle aspiration cytology (FNAC) is a simple, quick and widely practised inexpensive technique used for diagnosis of superficial masses. Advantages of FNAC are minimal trauma to the patient and no risk of complications. FNAC is an accurate and first line of investigative technique for lymph node pathological conditions, infectious diseases, cancers, metastasis, surgical intervention, and clinical follow-up. Sometimes, FNAC can avoid the need for excisional biopsy and allow rapid initiation of therapy. Recently, the diagnostic accuracy of FNAC is improved by immunocytochemistry and *in situ* hybridization.



NEW APPOINTMENTS

Dr Menaka Sethi, has joined as Assistant Professor in Banaras Hindu University, Varanasi, Uttar Pradesh on 29th October 2019. She graduated from Odisha Veterinary College, Odisha University of Agriculture and Technology, Bhubaneswar, Odisha in 2011. She obtained her MVSc and PhD degrees in Veterinary Pathology at ICAR-Indian Veterinary Research Institute, Izatnagar, UP in the year 2014 and 2018, respectively. **IAVP congratulates Dr Menaka on beginning of her professional career.**



Dr Rahul Ganpatrao Kadam has joined as Assistant Professor in Faculty of Veterinary & Animal Sciences, Institute of Agricultural Sciences, Rajiv Gandhi South Campus, Banaras Hindu University, Varanasi, UP on 24th October, 2019. He obtained his BVSc & AH from College of Veterinary and Animal Sciences, Parbhani, Maharashtra Animal and Fishery Sciences University, Nagpur, MS in 2009. He has completed MVSc in Veterinary Pathology from Post Graduate Institute of Veterinary and Animal Sciences, Akola, MAFSU, Nagpur, in 2011 and PhD degree from Division of Pathology, ICAR-Indian Veterinary Research Institute, Izatnagar, UP. Title of his PhD thesis was “Pathomorphological studies of diseases in wild felids with special reference to canine distemper”. He had two years’ experience in Good Laboratory Practice based Contract Research Organization, International Institute of Biotechnology and Toxicology (IIBAT), Chennai, Tamil Nadu, where he worked as a Scientist and Study Director. **IAVP congratulates Dr Kadam on beginning of his professional career.**



WINTER SCHOOLS

ICAR Sponsored Winter School on “Molecular approaches for diagnosis of cancer in animals including poultry” held at Sri Venkateswara Veterinary University, Tirupati, AP

A 21 days ICAR-Winter School on “Molecular approaches for diagnosis of cancer in animals including poultry” has been conducted in Department of Veterinary Pathology, College of Veterinary Science, SVVU, Tirupati from February 6th to 26th, 2020 under leadership of Dr Ch. Srilatha, Professor & University Head as Course Director. The training programme was started with the registration of 17 participants which included 7 participants each from Tamil Nadu and Andhra Pradesh and one each participant from Karnataka, Madhya Pradesh and Telangana. On 6th February inaugural function held in the presence of Vice Chancellor Dr Hari Babu, Dean, Faculty of Veterinary Science, Dr T.S. Chandrasekhar Rao and Associate Dean Dr K. Nalini Kumari, teaching staff of different departments and PG students. Dignitaries conveyed valuable messages regarding the training programme. A number of eminent pathologists viz. Dr C. Balachandran, Vice Chancellor, TANUVAS, Retd. Prof. A.T. Rao, OUAT, Bhubaneswar; Retd. Prof. N.R. Gopal Naidu, CVSc, Tirupati and Dr G.A. Balasubramaniam, Professor and Head, VCRI, Namakkal delivered the invited guest lectures. Other senior faculty members of different departments gave the invited lectures and practical approaches for cancer diagnosis. Comprehensive idea was imparted to the participants starting from clinical approach to the molecular diagnosis of cancer.



ICAR Sponsored Winter School on “Advances in livestock disease diagnosis using clinico-pathological and molecular techniques” held at ICAR-Indian Veterinary Research Institute, Izatnagar, UP

ICAR Sponsored Winter School on “Advances in livestock disease diagnosis using clinico-pathological and molecular techniques” was organized during 3-23rd October, 2019, at Division of Pathology, ICAR-Indian Veterinary Research Institute, Izatnagar, UP. Twenty five participants from different parts of the country attended the Winter School. The Chief Guest of inaugural function was Dr C. Balanchandran, eminent Veterinary Pathologist and Vice Chancellor of TANUVAS, Chennai while Dr R.K. Singh, Director, ICAR-IVRI, Izatnagar, UP presided over the function. Dr K.P. Singh, HOD (Pathology) and Course Director, Winter School welcomed guests, trainees, audience and narrated objectives of training programme. The occasion was graced by Dr V.K. Gupta, Joint Director, CADRAD, IVRI, Dr R. Somvanshi, ICAR-Emeritus Professor and Ex. HOD, Dr Rajendra Singh, ICAR-Emeritus Professor and Ex. HOD, Dr S.D. Singh, retired I/C Avian Disease



Section, Dr A.K. Sharma, retired I/C, Wild life Centre, IVRI, faculty members, students and staff. On this occasion two books related with Winter School were also released. Dr G. Saikumar, Principal Scientist and I/C PME Cell gave vote of thanks. Guest lectures were delivered by Dr Ashok Kmar, ADG (AH), ICAR, Dr Jyoti Misri, Principal Scientist, Animal Science Division, ICAR, Dr N.K. Sood, Retired Professor, GADVASU, Ludhiana, Punjab, Dr Hemant Dadhich, Director Research, RAJUVAAS, Bikaner and Dr A.P. Singh, RAJUVAAS, Bikaner. Valedictory function was addressed by Dr B.P. Mishra, Joint Director (Research), IVRI. The programme ended after distribution of certificates to trainees.

WEBINARS

Webinar on Advancements in Diagnostics-A Journey in Veterinary Pathology Jointly Organized by RAJUVAS, Bikaner, Rajasthan

Rajasthan University of Veterinary and Animal Sciences, Bikaner and Indian Association of Veterinary Pathologists jointly organized a National Webinar on “Advancements in Diagnostics- A Journey in Veterinary Pathology” on October 14th, 2020. Dr Manisha Mehra was the Organizing Secretary and Dr Manisha Mathur and Dr Abhilasha Dadhich were Co-Organizing Secretaries of the event. Prof. Vishnu Sharma, Vice Chancellor, RAJUVAS was the Patron and Dr B.N. Tripathi, DDG (AS), ICAR was Chief Guest of Webinar. Prof. R.S. Chauhan, Head, Department of Veterinary Pathology, College of Veterinary Sciences, GBPUAT, Pantnagar, Uttarakhand and Dr K.P. Singh, Secretary General, IAVP, Principal Scientist and Head, Division of Pathology, IVRI, Izatnagar, Bareilly were key invited speakers. They delivered lectures on topic “Advancements, applications and scope of immunopathology and immunohistochemistry in animal health” and “Molecular diagnostics and their utility in veterinary science” respectively. In this webinar 939 participants from all over India and 3 from Malaysia, Ethiopia and Australia were registered. The live event was attended by 1023 people. Deans, Directors, Registrar, Comptroller and Controller of Examination of RAJUVAS attended webinar. Prof. Hemant Dadhich welcomed the dignitaries. Chief Guest, Dr B.N. Tripathi, President, IAVP and DDG Animal Science, ICAR, New Delhi, thrown light on the importance of this topic. This webinar was organized to improve the skill of veterinary fraternity.



Veterinary Pathology Webinar Organized by SDAU, SK Nagar, Gujarat

Department of Veterinary Pathology, College of Veterinary Science and Animal Husbandry, Sardarkrushinagar Dantiwada Agricultural University, Sardarkrushinagar, Gujarat successfully organized a webinar series, covering three important areas of Veterinary Pathology viz. Avian Pathology, Clinical Pathology and Toxicologic Pathology on dated 10.07.2020 and 18.07.2020. Team of Department of Veterinary Pathology comprising of Dr B.J. Patel, Professor & Head, Dr S.H. Raval, Dr R.S. Parmar and Dr J.G. Patel, led by Dr D.V. Joshi, Dean acted as Organizing Committee. The webinar received excellent response with more than 450 participants registered from all over the India including few participants from neighboring countries-like Bangladesh, Nepal and Qatar. On first day (10-7-2020) the participants were welcomed by Dr D.V. Joshi, Principal & Dean of the College. The participants were encouraged by motivational words of Dr R.K. Patel, Vice Chancellor, SDAU, S.K. Nagar. Two expert lectures by Dr K.S. Prajapati, Retired Professor & Head, Anand Agricultural University, Anand and Dr S.H. Raval, Assistant Professor, Department of Veterinary Pathology, SDAU, Sardarkrushinagar were delivered. Dr Prajapati excellently discussed about his topic entitled “Changing Pathogens: Major Challenge in Disease Management” and shared latest information regarding trends of various disease causing pathogens in country. Dr Raval marvelously justified his lecture topic and provided information on important diagnostic aspects of clinical bovine hematology. The third expert who delivered his talk in this webinar series on dated 18.07.2020 was Dr Mohamad Sadik Mulla, Senior Manager, Vimta Labs Ltd., Hyderabad, Andhra Pradesh. He delivered his presentation on the reproductive toxicopathology. Participants appreciated all three expert lectures. At the end of lectures on both day participants had fruitful interaction with speakers. Both the sessions were ended by Vote of Thanks delivered by Dr D.V. Joshi.



Dr D.V. Joshi



Dr K.S. Prajapati



Dr S.H. Raval



Dr Mohd. Sadik Mulla

Glimpses of Veterinary Pathology Congress, 2019, CAU, Selesih, Aizawl, Mizoram

The Department of Veterinary Pathology, College of Veterinary Sciences and Animal Husbandry, Central Agricultural University, Selesih, Aizawl, Mizoram in association with IAVP and ICVP organized successfully the XXXVIth Annual Conference of Indian Association of Veterinary Pathologists, Xth Annual Meeting of Indian College of Veterinary Pathologists and National Symposium on “Advances in Veterinary Pathology for Fostering One Health, Food Security and Environment Protection” on 6-8 November, 2019. The event was organized in the College of Veterinary Sciences and Animal Husbandry, CAU, Selesih, Aizawl, Mizoram under the leadership of Dr T.K. Rajkhowa, Professor and Head, Department of Veterinary Pathology as the Organizing Secretary, which was attended by 165 delegates from all over India and one international delegate, Prof. Matti Kiupel, from Michigan State University, East Lansing, MS, USA.

The Inaugural Function of the event was held on 6th November, 2019. Prof. H.D. Narayanaswamy, Vice Chancellor of Karnataka Veterinary and Fishery Sciences University, Bidar was the Chief Guest; Prof. Matti Kiupel, Michigan State University, Michigan, MS, East Lansing, USA was the Guest of Honour and presided over by Prof. M. Premjit Singh, Vice Chancellor, Central Agricultural University, Imphal, Manipur. Chairperson of the Organizing Committee and Dean, College of Veterinary Sciences and Animal Husbandry, CAU, Selesih, Aizawl, Mizoram. Prof. Lalnuntluangi Hmar welcomed the delegates and briefed the activities of the College. Guest of Honour, Prof. Matti Kiupel, expressed his pleasure to get the opportunity for attending the Veterinary Pathology Congress, 2019. Annual Report of IAVP was presented by the Secretary General, Dr K.P.



Address by Prof. M. Premjit Singh, Vice Chancellor, CAU, Imphal, Manipur



Address by Chief Guest Dr H.D. Narayanaswamy, Vice Chancellor, KFASU, Bidar, Karnataka



Address by Guest of Honour, Prof. Matti Kiupel, College of Veterinary Medicine, Michigan State University, East Lansing, MS, US



IAVP Fellowship presented to Dr H.D. Narayanaswamy by Prof. M. Premjit Singh, Vice Chancellor, CAU, Imphal, Manipur

Singh which revealed multifarious positive growth of IAVP. Prof. Amarjit Singh, Secretary of ICVP briefed about the aims and activities of ICVP and presented ICVP report. In absence of Dr R. Somvanshi, President, IAVP, R.C. Ghosh, Vice President, IAVP briefed the gathering about the various activities of IAVP and role of Veterinary Pathologist in disease diagnosis, control and prevention. Dr T.V. Anilkumar, President, ICVP narrated the importance and future prospective of ICVP and ICVP Board examination. Prof. M. Premjit Singh, in his Presidential Address, briefed about the various activities and achievements of the Central Agricultural University in the field of agriculture and allied discipline. He appealed the scientific community in the field of Veterinary Pathology to come forward with newer technology to combat the emerging and re-emerging diseases to protect our livestock, poultry and wildlife population for food security and protection of environment. Most of speakers appreciated contributions of Dr R. Somvanshi, President, IAVP for advancement of IAVP during his tenures of Presidentship. Detailed report may be seen at iavp.org



IAVP Fellowship presented to Dr Arvind Ingle by Prof. Matti Kiupel, MSU, East Lansing, MS, US



Release of Veterinary Pathology Congress, 2019 Compendium by dignitaries on dais



Vote of thanks by Dr T.K. Rajkhowa, Organizing Secretary, VPC, 2019



Poster Session in progress



Felicitations of Dr T.K. Rajkhowa, Organizing Secretary & Team, CAU, Selesih, Aizawl, Mizoram



Cultural programme by students of Veterinary College, CAU, Selesih, Aizawl, Mizoram

- Dr T.K. Rajkhowa, Organizing Secretary, Veterinary Pathology Congress, 2019, Veterinary College, CAU, Selesih, Aizawl, Mizoram

IAVP ZONAL CONFERENCE

Glimpses of IAVP Zonal Conference, CVSc, BAU, Ranchi, Jharkhand

A two day IAVP Zonal Conference, 2020 and National Symposium on “Recent Advances in Diagnostic Pathology for Emerging and Re-emerging Diseases of Livestock, Poultry under Farming Conditions and Wildlife” held on 22-23 February, 2020. It was organized by Department of Veterinary Pathology, College of Veterinary Sciences and Animal Husbandry, Birsa Agricultural University Ranchi, Jharkhand under the leadership of Prof. M.K. Gupta, Organizing Secretary and Chairman, Department of Veterinary Pathology, CVSc& AH, BAU, Ranchi, Jharkhand. Conference was attended by 202 delegates from twelve states of the country. Dr B.N. Tripathi, Deputy Director General (Animal Science), ICAR, New Delhi and President, Indian Association of Veterinary Pathologists was the Chief Guest of Inaugural Function. In his inaugural address Dr Tripathi expressed concern over recent incidence of emerging and re-emerging diseases such as Lumpy Skin Disease, Avian Influenza, Chicken Infectious Anemia, Porcine Cercoviral infection, Glanders, PRRS in pigs, PPR in goats etc., due to which livestock and poultry industry is facing huge economic losses. He emphasized the need to develop Advanced Disease Diagnostic Laboratories in each state of the country which should work in close association with National Laboratories such as National Research Centre for Veterinary Type Culture (NRCVTC), Hisar, ICAR–National Institute of High Security Animal Diseases (NISHAD), Bhopal and Centre for Animal Disease Research and Diagnosis (CADRAD), IVRI, Izatnagar, UP with appointment of trained manpower and experts to run these laboratories effectively for strengthening disease surveillance system. Occasion was graced by benign presence of Dr N. Kudada, Registrar, BAU, Dr M.S Mallik, PI, NAHEP-CAAST Programme, BAU, Dr Sushil Prasad, Dean, Faculty of Veterinary Sciences & AH, BAU, Dr R.



Birsa Agricultural University, Kanke, Ranchi, Jarkhand



Birsa Bhawan Statue at BAU, Ranchi



Welcome Gate IAVP Zonal Conference CVSc, BAU, Ranchi



Release of IAVP Zonal Conference Compendium



Address of Dr B.N. Tripathi, President, IAVP and DDG (AS), ICAR, New Delhi

Somvanshi, Immediate Past President, IAVP, Zonal Secretaries Dr R.C. Ghosh and Dr S.K. Mukhopadhyay, Prof. H.V.S. Chauhan, ex HOD, Prof. K.K. Singh, ex HOD, Dr G. Saikumar, Principal Scientist, IVRI to name a few. The two day Zonal Conference was scheduled in 10 Technical Sessions which included seven scientific sessions, one session each of Young Scientist Award, Best Lady Veterinarian Award and Best Poster Presentation Award. A total 15 invited lectures and 89 oral and poster papers were presented. Detailed Technical Report of Zonal Conference may be seen in IAVP Website iavp.org



Life Time Achievement Award to former HOD (Vety. Pathology) Dr H.V.S. Chauhan



Life Time Achievement Award to former HOD (Vety. Pathology) Dr K.K. Singh



Vote of Thanks by Dr M.K. Gupta, Organizing Secretary



Ex. President IAVP Dr R. Somvanshi with Chairman IAVP Chapter, Jharkhand Dr K.K. Singh attending conference



A Scene of Cultural Evening



Welcome Again at Jharkhand

- Prof. M.K. Gupta, Organizing Secretary and Chairman, Department of Veterinary Pathology, CVSc & AH, BAU, Ranchi, Jharkhand

OBITUARIES

Dr R.B. Rai Passes Away

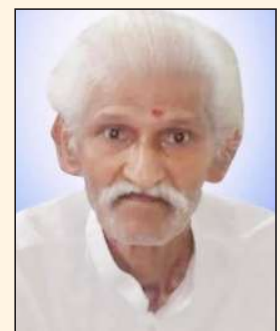
Dr R.B. Rai was born on 5th January, 1954 at Gorakhpur, UP. He was awarded BVSc & AH degree with honours (1977), MVSc (1979) and PhD (1983) degrees in Veterinary Pathology from GBPUA&T, Pantnagar. He started his career as Teaching Associate (1980-1981) and then served as Assistant Professor (1981-1983). In 1983, he joined Agricultural Research Services and served as Scientist S-1 (1983-87) at Division of Fur Animal Breeding, CSWRI, Garsa, Kullu, Himachal Pradesh; Senior Scientist (1987-1999) and Principal Scientist (1999-2006) at CARI, Port Blair and at Division of Pathology, IVRI, Izatnagar, UP (2006-2016). During his services in ICAR he served on various posts viz. Director, Animal Husbandry and Veterinary Services (1997-2002) with additional charges of Director, Agriculture and Director, Fisheries for various periods in Andaman and Nicobar Islands, Head of Division, Animal Science Division and Acting Director, Central Agricultural Research Institute, Port Blair. During his career he worked in 16 research projects as PI/ CPI/Co-PI. He guided 6 MVSc and 3 PhD students. His publications include 230 research papers, 52 invited/ lead papers, 172 abstracts in symposia/ seminars, 12 books, 23 bulletins. Besides, publishing more than 150 popular articles; he used E-Books to disseminate the technologies. His main emphasis was to integrate research with development and developing low cost highly profitable technologies for maximum profitability and targeting the critical areas providing reasonable solutions for problems like - mastitis, anoestrous, endometritis, universal plant bio-growth enhancers, rural poultry production, etc. Dr Rai has made significant contributions in the control of calf mortality, mass control of infertility in bovines and oestrous synchronization and development of preventive and therapeutic measure against mastitis. He has claimed in contribution of development of varieties viz. Teressa goat (an unreported germ plasm), Nicobari fowl and its two crosses, two strains of dual purpose poultry i.e. Nishibari and Nicorock, high producing line of Nicobari fowl and Boer goat crosses (Boer semen x local female). Dr R.B. Rai has been recipient of several national awards including ICAR Team Research Award (1991-93 and 2001-02), ICAR Fakhruddin Ali Ahmad Award (1994-95 and 2002-03), Fellowship of NAAS (2010), NAVS (2008) and BIOVED (2010), NAAS - L.C. Sikka Award (2011-12), DBT Biotechnology Award for Products and Processes (2013), ICAR/NAIP Certificate of Appreciation (2012), IAVP-Dr Patri Rama Rao Award (2014) and Dr Ram Raksha-Kiran Shukla Award (2014) to his PG students. He filed 4 patents which have been commercialized to 8 firms. He was a member of three member delegation of DARE, GOI to Maldives for creating greeninary in the newly developed Island Halhumale. He superannuated from Councils services on 31st, January, 2016 as Principal Scientist after more than three decades fruitful applied services to Nation. He suddenly passed away at Distt. Banda on 10-1-2020 while he went to attend a meeting at Banda University of Agriculture and Technology, Banda, UP. Dr Rai is survived by his wife Mrs Shushila Rai, Abhishek, Madhuresh (sons) and Archana (daughter). Sudden demise of Dr Rai is shocking and a great loss to Veterinary Pathology fraternity and farmers. His relatives and colleagues paid rich tribute to him on social media including IAVP WhatsApp group. **May God give peace to departed soul and strength to his grieved family members.**



(1954-2020)

Dr S.K. Mahajan Passes Away

Dr S.K. Mahajan, MVSc, PhD (Veterinary Pathology), retired Professor and Head, Department of Veterinary Pathology, CCS, HAU, (now LUVAS), Hissar, Haryana passed away on dated 28-9-2020. He started his career as a Veterinary Surgeon in Department of Animal Breeding in December, 1962 and later joined as Teaching Associate in Department of Veterinary Pathology in 1969 at HAU, Hisar. He did his masters degree under able guidance of Dr C.M. Singh, the than Professor and Head, Department of Veterinary Pathology and Dean, HAU, Hisar. In HAU, he served in different positions and finally joined as Professor and Head, Department of Veterinary Pathology during 1992-95. Dr Mahajan contributed significantly in undergraduate and postgraduate teaching and students thesis guidance. He superannuated from University services in December, 1999. He was a learned academician, dedicated scientist, devoted veterinary doctor and committed social worker. After superannuation he spent lot of time in socio-cultural reforms and perturating scientific thinking for defeating superstitions. Dr Mahajan was a disciplined person with a high moral charater. He was epitome of simple living and high thinking. Dr Mahajan passed away on dated 28-09-2020. **IAVP conveys deep condolences to bereaved family to bear this irreparable loss and preys for eternal peace to departed soul.**



OBITUARIES

Dr H.K. Pradhan Passes Away

Dr Hare Krishna Pradhan, MVSc, PhD, FSIIP, FIAVMI, eminent avian pathologist, researcher, able administrator and bird flu man of India was born in a teacher's family in a small village Khajuri Pada in Khandmal district of Orissa and was one of nine siblings. He completed his studies right from primary till his BVSc&AH (1969), MVSc (1973-Veterinary Pathology) from the College of Veterinary Science and Animal Husbandry, OUA&T, Bhubaneswar and PhD (Veterinary Pathology) from Division of Avian Diseases, IVRI, Izatnagar, UP with support of scholarships. He got opportunity to work under guidance of eminent Veterinary Pathologists of country Prof. B.C. Nayak and Professor G.C. Mohanty. He joined as Scientist S-1 (ARS, Second Batch) at Division of Avian Diseases, IVRI, Izatnagar in 1977 and promoted to the post of Principal Scientist. Here Dr Pradhan worked on a number of poultry diseases including Infectious Bronchitis, Avian Mycoplasmosis, Marek's disease etc. He conducted intense research on pathogenesis and pathology of poultry diseases, supervised MVSc and PhD students and reported a number of new poultry diseases. As a renowned Poultry Pathologist, subsequently he was transferred to High Security Animal Disease Laboratory (BSL-4) at Bhopal, MP. He worked as Joint Director / Head of the HSADL, Bhopal, from February, 1997 till his retirement on 31st March 2007. His significant contributions included development of killed vaccine for H5N1 and helped in controlling avian influenza. First time in India he diagnosed exotic diseases like bird flu, BVD, MCF, BIV etc. He was responsible for creating Specific Pathogen Free (SPF) facilities at HSADL, Bhopal for the production of SPF eggs. He has published more than 108 scientific papers of which 18 are in foreign journals. Dr Pradhan's scientific contributions are endless and his research papers have been included in the textbooks referred worldwide, although he has worked only in India. He has delivered several invited lectures across Country. He played pivotal role in getting validated the 1st BSL-4 Lab of India and headed its functions with great dedication and devotion first as Joint Director and later as Director. Dr Pradhan also helped and promoted the Biosafety Concept in facilities in India to safe guard both animal and human health. He was associated in setting up the HSADL which was his biggest life time achievement. It was this achievement that prompted President Dr A.P.J. Abdul Kalam, who was then the advisor to the Defence Research and Development Organisation (DRDO), to offer Dr Pradhan consultancy job to set up an Animal Disease Lab under the DRDO, Gwalior, MP. The HSADL/NIHSAD was recognised as Referral Lab of Avian Influenza by FAO/OIE during his tenure. He was associated in establishment of a few BSL-3 labs in India. He was National Consultant in WHO from January, 2008 to March, 2012. After retirement from ICAR services, he worked for two terms as the National Consultant (Avian Influenza), WHO, New Delhi till March 2012. With WHO support he was in liaison with both the medical and veterinary professionals for the control of Avian Influenza and other zoonotic diseases. He worked in several Expert Committees of the ICAR and other scientific organizations. His contributions were always very apt and helpful. Dr Pradhan's dream was to set up a laboratory to deal with bio-terrorism threat, which he foresees as harsh reality in the world. Dr Pradhan passed away on 6th August, 2020. In passing of Dr H.K. Pradhan IAVP members have lost a fine colleague, excellent scientist, researcher and good administrator. He was polite, down-to-earth and a workaholic. He is survived by his wife Mrs Krishnapriya, a son and a daughter. **IAVP preys Almighty God to bestow peace to his soul and strength to his bereaved family to bear this great loss.**



(1945-2020)

Dr R. Ramakrishnan Passes Away

Dr R. Ramakrishnan served as Professor and Head, Department of Veterinary Pathology at Madras Veterinary College, Chennai during 1977 to 1986. He passed away on 2nd October, 2019. More information is awaited from TANUVAS, Chennai. **IAVP expresses deep condolences.**

**Dr D.K. Basak Passes Away**

Dr D.K. Basak, MVSc, PhD, Retired Head cum Reader, Department of Veterinary Pathology, WBUAFS, Kolkata passed away on 1-05-2020. He was born on 30.05.1942. Detailed Obituary may be seen in IJVP and IAVP Website iavp.org soon. **IAVP expresses deep condolences.**



NEWS

Dr Karikalan, M., Scientist, Centre for Wildlife Conservation Management & Disease Surveillance, ICAR-Indian Veterinary Research Institute, Izatnagar, UP received approval (File Number CRG/2020/004743 dated 8-12-2020) of project entitled “Patho-epidemiology of elephant endotheliotropic herpesvirus infections affecting Asian elephants (*Elephas maximus*) in India” by Department of Science and Technology, Government of India, Science and Engineering Research Board under Core Research Grant. This is a three year research project with some contractual staff and enough budgetary provision. **IAVP congratulates Dr Karikalan for his significant achievement.**



Achievements of New Executive Member Dr Debiprasanna Das, Assistant Professor, Department of Veterinary Pathology, CVSC&AH, OUAT, Bhubaneswar, Odisha

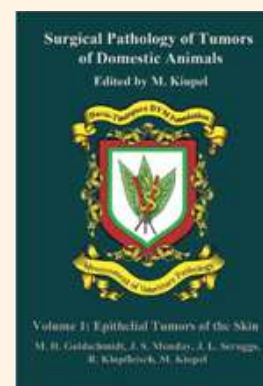
- ICVP-Diplomate Award by the Indian College of Veterinary Pathologists (the youngest faculty to qualify Diplomate among all the faculties/Scientists of SAUs and ICAR system in India).
- Elected as Executive Member of Indian Association of Veterinary Pathologists for 2019-2022.
- Course Co-Director of ICAR sponsored 21 days Winter School on Climate change impact on livestock production system.
- Editor of book entitled “Impact of Climate Change on Livestock Health and Production” (ISBN9789390175024), Publisher-NIPA, New Delhi.
- Received Ram Singh Memorial National Animal Welfare Award, 2020 by Pashudhan Praharee. **IAVP congratulates Dr Das for his professional achievements.**



Goldschmidt, M.H., Munday, J.S., Scruggs, J.L., Klopffleisch, R. and Kiupel, M. (2018). Surgical Pathology of Tumors of Domesticated Animals: Volume 1; Epithelial Tumors of the Skin. Pages-1-239+i-vix, Editor M. Kiupel. Publishers: Davis-Thompson DVM Foundation, 6241, Formoor Lane, Gurnee, Illinois, 60031-4757, US. ISBN-13:978-1-7337491-1-4, Paper cover bound. Price \$40.00

This book is the third edition of International Histologic Classification of Skin Tumors of Domestic Animals. The original book was published in 1974 and Second Edition came in 1998. The first volume contains several chapters. The book begins with Section A. on embryogenesis and anatomy of the skin which is having sub sections on embryogenesis and anatomy. The later Section describes epidermis, Merkel cells, skin adnexa, hair follicle, sebaceous gland, apocrine gland and eccrine gland. It also discusses species differentiation in the anatomy of the skin and immunohistochemistry of cutaneous epithelia. Section B. deals with important area of identification and assessment of tumor margins while Section C. is on classification of epithelial tumors of the skin. It is subdivided into: 1. Tumours of the epidermis (Hyperplastic and pre-neoplastic tumors, benign neoplasms of the epidermis and malignant neoplasms of the epidermis); 2. Epithelial tumors without squamous or adnexal differentiation (both benign and malignant types); 3. Tumors with adnexal differentiation (Follicular, nailbed tumors, sebaceous and modified sebaceous gland tumors, apocrine and modified apocrine gland tumors, eccrine tumors and undifferentiated adnexal neoplasms); 4. Endocrine neoplasms of the skin (Merkel cell tumor and tumor with features of adreno-cortex); 5. Tumors metastatic to the skin and nailbeds; 6. Cysts; 7. Hamartomas and 8. Tumor-like lesions. Author states that focus of this series is on tumors of dogs and cats and a lesser degree on horse neoplasms. Since neoplasms in domestic livestock are rare as such they were addressed when unique entities required mention. As usual the book is printed on high quality of glassy paper with appropriate diagnostic description, high quality of histopathology and immunohistochemistry images. The book is essential for scholars and diagnosticians working in discipline of Veterinary Pathology. This will be definitely very useful to improve skill of epithelial skin cancer diagnosis.

BOOK REVIEWS



Zappulli, V., Pena L., Rasotto, R. Goldschmidt, M.H., Gama, A. Scruggs, J.L. and Kiupel, M. (2018). Surgical Pathology of Tumors of Domesticated Animals: Volume 2; Mammary Tumors. Pages-1-269+i-xv+ Index 1-3, Editor M. Kiupel. Publishers: Davis-Thompson DVM Foundation, 6241, Formoor Lane, Gurnee, Illinois, 60031-4757, US. ISBN-13:978-1-7337491-1-4, Paper cover bound. Price \$40.00



Mammary tumors are the most frequently diagnosed neoplasms in intact female dogs with rates of malignancy vary from 40-60 percent. This book is the third edition of International Histologic Classification of Mammary Tumors of Domestic Animals. The original book was published in 1974 and Second Edition came in 1999. Section A. explains introduction and significance of topic while Section B. deals with embryology, physiology and anatomy of mammary gland. Further breakup of this Section is under embryology, anatomy and histology, changes in the mammary gland during the estrus cycle, hormone receptors in the canine and feline mammary gland and immunohistochemistry of the mammary gland. The Section C. is on identification and assessment of mammary tumor margins. This subject is very useful in applied diagnosis of malignancy. Section D. gives definition and terminology used in mammary lesions, Section E. is on criteria of malignancy, Section F. is on grading of canine and feline mammary tumors, Section G. is molecular classification of mammary tumors and H. on classification of canine mammary tumors. The canine mammary tumor also deals with 1. Hyperplasia/dysplasia; 2. & 3. Benign and malignant epithelial hyperplasia; 4. Malignant epithelial neoplasms-special types; 5. Malignant mesenchymal neoplasms of the mammary gland; 6. Carcinosarcoma; 7. Hyperplasia/ dysplasia of the teat; 8. Neoplasms of the teat; 9. Other neoplasms arising at the site of the mammary gland; 10. Neoplasms metastasizing to the mammary gland and; 11. Non-neoplastic lesions of the mammary gland. This volume of book also describes classification of feline mammary tumors. This has been dealt under different sub headings viz. 1. Hyperplasia/dysplasia; 2. Benign epithelial neoplasms; 3. Malignant epithelial neoplasms; 4. Malignant epithelial neoplasms-special types; 5. Malignant mesenchymal neoplasms of the mammary gland; 6. Carcinosarcoma; 7. Hyperplasia/ dysplasia of the teat; 8. Neoplasms of the teat; 9. Other neoplasms arising at the site of the mammary gland; 10. Neoplasms metastasizing to the mammary gland and; 11. Non-neoplastic lesions of the mammary gland. Lastly, Section J. Deals with mammary tumors in other species including equine and ferret. Author states that present series on classification will also contain information on differential diagnosis and prognosis tumors of each tumor entity as well as cytology. The focus of this series is on tumors of dogs and cats and, a lesser degree, horses. Neoplasms in domestic livestock are rare and were addressed when unique entities require special mention. As usual the book is printed on high quality of glassy paper with appropriate diagnostic description, high quality of histopathology and immunohistochemistry images. The book is very essential and useful for scholars and diagnosticians working in Veterinary Pathology laboratories. This will be definitely very useful to improve skill of mammary cancer diagnosis.

Acknowledgments: Thanks are due to Prof. Matti Kipel, MSU, East Lansing, MS, US for gifting these two books to the than President, IAVP Dr R. Somvanshi.

Reviews By: Dr R. Somvanshi, ICAR-Emeritus Professor, Division of Pathology, ICAR-IVRI, Izatnagar, UP

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