



Workshop on Basic Mechanisms of Disease and Poultry Pathology

University of Veterinary and Agricultural Sciences
Lahore, Pakistan
March 2-4, 2020

Executive Summary

Over the course of three days, 117 veterinarians gathered together to participate in group interactive and practical sessions on pathology. Participants came from 4 different academic institutions, several poultry companies, and both research and regulatory government facilities. They reviewed concepts and scenarios involving basic mechanisms in general pathology, specific disease scenarios of poultry diseases with a focus on pathogenesis, and performed necropsy of poultry. All instruction was provided using adult learning theory. Evaluations were very positive.

See page 7 for evaluations.

See page 9 for a full list of participants.



Learning Objectives:

At the end of the workshop, participants will be able to:

1. Describe lesions accurately with a formulation of the mechanism that created the lesion
2. Create useful morphologic diagnoses
3. Be able to explain pathogenesis of the common poultry diseases in Pakistan
4. Perform a necropsy on a chicken, collecting and packaging tissues in an appropriate manner for use in the laboratory

Monday, March 2

Opening Ceremony

Dr. Rabbani, UVAS Dean, welcomed participants. Dr. Corrie also welcomed everyone.

Introductions

For participant introductions, they counted around the room, 1 to 10, in Urdu, with subsequent organization into 10 tables. Then a leader from each table introduced everyone at his/her table, to the larger group.

Adult Learning Theory

Corrie discussed pertinent aspects of how to facilitate learning in adults. The basic tenets of adult learning theory are: material must have relevance to participants; group/social learning is especially effective for adults; full trust between learner and presenter is paramount; problem solving helps to solidify core concepts; frequent breaks with activities to allow transfer to long-term memory.

We reviewed the learning objectives.

Morning practical session – Disturbances of Circulation

We listed all the key mechanisms in Disturbances of Circulation, and then each table selected one of these topics, and had 5 minutes to prepare a very short (2' maximum) explanation of this topic to the larger group. The following topics were then reviewed: hyperemia, congestion, hemorrhage, edema, shock, thrombosis, embolism, infarction.

Scenarios covering all these topics, presented as one-page laminated sheets with a photo of a representative lesion as well as a series of questions, were distributed for table discussion, then reviewed at the end as a large group. Emphasis was on accurate description, morphologic diagnosis, and underlying pathogenesis.



There was considerable discussion surrounding morphologic diagnosis so Corrie gave a review of S-T-D-E-T (Severity; Time; Distribution; Exudate; Tissue). We practiced with multiple lesions seen that day and Corrie explained how this morphologic diagnosis is important in communicating between pathologists and between clinicians/pathologists and the laboratory. It was repeatedly emphasized that “animal health is a team effort” and the laboratory needs a full appreciation of what was seen by the pathologist.

Miscellaneous diseases – using scenarios – Participants were given full scenarios of the following diseases: Marek’s disease; lymphoid leukosis; Gumboro; inclusion body hepatitis. After all tables had seen all four scenarios, we did a group review.

In preparation for tomorrow, Corrie presented the “**Six Steps to a Successful Necropsy**”. Most participants had performed necropsies on chickens before, but did not have a systematic procedure for ensuring that all body systems are assessed. They described how they open the body to find a diagnosis, and do not always assess all body systems. Corrie discussed a common problem among pathologists globally in doing “wallpaper pathology” and how lesions are compared to pre-existing mental images of a disease and a diagnosis immediately rendered, without fully considering all body systems and putting all lesions together into a pathogenesis framework. She described how this does not adequately utilize our scientific skills, and that performing a full necropsy systematically, complete with descriptions of every body system and morphologic diagnoses, can help us to more thoroughly and accurately connect with laboratorians and will eventually help inform producers regarding most effective control measures.

Tuesday, March 3

Respiratory Problems

Prior to introducing the respiratory diseases, Corrie presented an overview of defenses in the respiratory tract and why so many respiratory diseases are multifactorial. She illustrated the mucociliary escalator by having participants line up as epithelial cells with cilia, in two rows, facing each other and waving their arms (as cilia) to fend off invaders. Then she ran through, knocking some out of the way, as infectious bronchitis, infectious laryngotracheitis, or *Mycoplasma* might do. This allowed by another agent, for instance, avian pathogenic *E. coli*, represented by Salman, to run through the trachea without being stopped by the mucociliary escalator and enter air sac or lung.

The diseases covered included: infectious bronchitis, infectious laryngotracheitis, mycoplasma, aspergillosis, and avian metapneumovirus.

Transboundary Animal Diseases

Corrie used an animated powerpoint to underscore the differences between highly pathogenic avian influenza and Newcastle disease. Pathogenesis and epidemiologic aspects were discussed and then participants answered using True-False questions regarding the two diseases, to help incorporate key concepts.

Afternoon – Necropsy Laboratory and Review of Inflammation

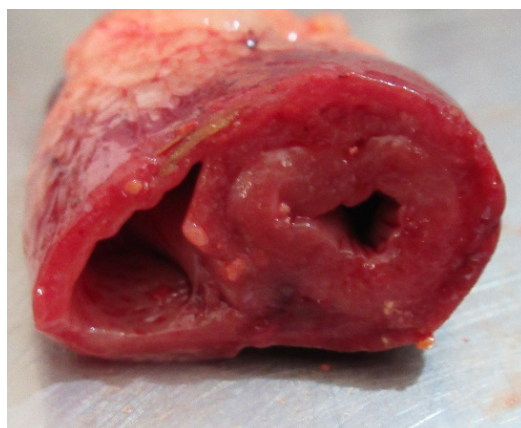
The area surrounding Lahore has numerous broiler operations. Some of the participants are the attending veterinarians at these facilities and were asked to bring in any “deads” for necropsy. As a result, we had approximately 50 birds for necropsy. There were too many participants to fit all in the necropsy room at once, so we divided the group in 2 – with the other group covering Inflammation in the classroom (with Tanja), and then switching at the halfway point. Participants worked in pairs or three’s, and were encouraged to follow the systematic “six steps” and to collect samples and write a full report.



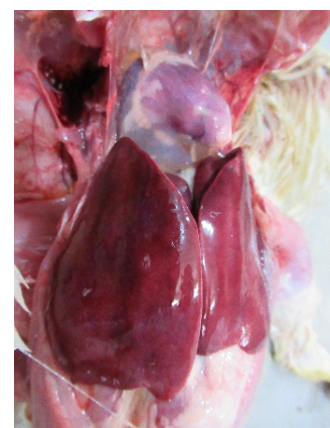
We had multiple cases of hypertension syndrome and colibacillosis. There was a great tendency to just name the disease and move on, but participants were encouraged to work through all aspects of pathogenesis and be able to explain each lesion and its mechanism.



Fibrinous perihepatitis, suggestive of colibacillosis



Dilated right ventricle, suggestive of pulmonary hypertension syndrome



Hydropericardium, pulmonary hypertension syndrome

Thursday, March 4

Review of Necropsy

Corrie showed a few slides of necropsy lesions from the previous afternoon, and we discussed pathogenesis of each. Corrie emphasized the importance of looking at every tissue/organ in the bird, maintaining a routine system, and not falling back to “wallpaper” pathology, i.e., the bird has X lesion, therefore it is Y disease.

Case scenarios

We reviewed intestinal diseases plus remaining “miscellaneous diseases”, using scenario training again. These included: coccidiosis, runting-stunting syndrome, necrotic enteritis, pullorum/fowl typhoid; tibial dyschondroplasia; pulmonary hypertension syndrome. Format was the same, with each table discussing all scenarios. We concluded by reviewing all scenarios and having general discussions regarding field presentations, especially as they occur in Pakistan.

Connection with the Diagnostic Laboratory

Dr. Salman Latif gave the group some scenario information and each table had to list what tissues are important and what tests would be run in the laboratory. He continually stressed the importance of good connections between the field veterinarians and the laboratory and the importance of working as a team, which he felt could be greatly improved in Pakistan. He mentioned the “culture” of having to give farmers a diagnosis, with treatment, at the time of the farm visit, but that this may preclude more accurate diagnosis which could be achieved through better partnering with the laboratories. He acknowledged that this will take time to change.

After lunch, participants filled out evaluations.

Closing ceremony

Because of the number of participants, certificates were delivered before the closing ceremony began.

Ceremony began with a reading of the Koran. Three participants were selected by the group to relate their impressions of the course. They all stressed the fun learning environment and their gratitude to the organizers and the resource persons. Corrie and Tanja were each asked to address the participants, which they did, stressing their appreciation for the hard work and friendship demonstrated by all. The Vice Chancellor spoke for some time about the importance of global connections, lifelong learning, and impending establishment of licensure and continuing education. He expressed his gratitude to Dr. Ishtiaq Ahmed for his vision and diligence in pursuing opportunities for workshops such as this one. He also thanked Davis-Thompson Foundation for providing “excellent resource persons”. Then the course sponsors and The Vice Chancellor distributed awards. Dr. Salman Latif Butt received a Certificate of Appreciation for his input to the course. Corrie and Tanja received shields denoting appreciation, from the university, and also from each of the corporate sponsors.



An outdoor “high tea” was prepared, and all participants and facilitators gathered together for food and drink.



Appendix 1 - Evaluations:

Each score based on Likert scale (1, strongly disagree, to 5, strongly agree)

INSTRUCTION	
Learning objectives were accomplished	4.5
Instruction was of high quality	4.7
Interactive group exercises were valuable	4.5
FACILITIES AND ORGANIZATION	
The UVAS facilities met my needs	4.2
The pre-course organization was excellent	4.4

If this course were changed, what is ONE thing you would NOT like to see changed?

- Necropsy practicum (X26)
- All case scenarios (X18) (one commented they liked the hard copies and discussions)
- Overall course work and presentation style/teaching methodology (10)
- Stick to poultry diseases (1)
- Instructors, esp. high energy & interaction (11)
- Dr. Brown instruction was excellent & well demonstrated (4)
- Pathogenesis exercises (2)
- Lesion description explanation (1)
- Trachea/cilia activity (1)
- Refreshments (miss Russian salad though) (2)
- Seating arrangements (1)

If this course is given again, what is one thing you WOULD change?

- Good course but would like mixed poultry & large animals/various other animals (X14)
- Language gap (2): one student suggested to consider a highly qualified Pakistan professor to help deliver in Urdu
- Focus either on general pathology or poultry disease (1)
- Overall duration should not exceed 2 days (1)
- Dr. Salman's information was maybe too detailed (2)
- Dr. Zabka's inflammation instruction was very good but I am still confused (1)
- I missed Dr. Tony
- Use only foreign instructors next time (1)
- Sample technique & preservation section do practically or change approach (two said to increase Dx test exercises) (8)
- Use multimedia for discussion/explanations to provide more clarity (one said esp animated slides; two said instead of flip chart) (5)
- Change discussion procedure: provide disease overview briefly prior to handing out each case and overview of specific diagnostic tests (2)
- Less disease-specific exercises and more system-oriented/ pathogenesis-oriented (2)
- Histopathology exercises with good slide and how to interpret (one also asked for IHC) (2)
- Exercises lasted too short (i.e., more group discussion) (2)
- Increased explanation how to describe a lesion (1)

- Increased explanation for COD if caused by multiple insults (1)
- Make exercises harder (1)
- Would change group work (no alternative provided) (1)
- Discuss field conditions to support Dx (1)
- Exclude students (distraction) & limit course participants to 60 (1)
- Lunch should include 2-3 dishes (1)

Appendix 2. Participants

No.	Name	Status
1	Danish Durrani	PG student
2	Kissa Zahra	PG student
3	Sana Nisar	PG student
4	Shahtaj Qureshi	PG student
5	Sajid Khan	PG student
6	Muhammad Faran	PG student
7	Muhammad Farhan Siddiqui	PG student
8	Zunaira Ahmad	PG student
9	Sara Atique	PG student
10	Muhammad Sajid Latif	PG student
11	Rana Tasawar Hussain	PG student
12	M.Adeel ur Rehman	PG student
13	Muhammad Umair Akram	PG student
14	kinza Khan	PG student
15	Muhammad Azeem	PG student
16	Dr.Qamar Ullah	PG student
17	Muhammad Khurram Shahzad	PG student
18	Tayyab Khurshid	PG student
19	Muhammad Zahid	PG student
20	Mian Muhammad Khubaib Sattar	PG student
21	Naimat Ullah	PG student
22	Fazal Raziq	PG student
23	Muhammad Iqbal	PG student
24	Muhammad Ali	PG student
25	Irtaza Hussain	PG student
26	Dr.Saba Usman	PG student
27	Syeda Fakhra Waheed	PG student
28	Dr Rizwana Sultan	PG student
29	Dr Ahsan Anjum	PG student
30	Dr Usman Ali	PG student
31	Abeera Dar	PG student
32	Dr Bilal Ahmed Shah	PG student
33	Muhammad Rehan	PG student
34	Hafiz Rafay Rawaal	Veterinary Officer
35	Dr Adeel Shahbaz	Veterinary Officer
36	Dr. Abdul Wadood Jan	Veterinary Officer
37	Dr. Asad Ullah	Lecturer (Pathology)
38	Dr. Maryam Saddiqa	Veterinary Officer
39	Dr. Ali Ahmad	Sales Officer
40	Dr. Aabi	Sales Officer
41	Dr. M. Shahid Zahoor	PG student

42	Muhammad Usman Sadiq	PG student
43	Zeeshan Haider	PG student
44	Muhammad Wasil Rehman	PG student
45	Hafiz Atif Khurshid	PG student
46	M.Zain Akhtar	PG student
47	Dr. Hafiz Muhammad Anwar-ul-Haq	PG student
48	Usama Iqbal	PG student
49	Waqas Idrees	PG student
50	Sana Naeem	PG student
51	Dr.H. Armghan Saeed	PG student
52	Abdul Quddoos Shad	PG student
53	Shama Jamil	PG student
54	Waqar Azeem	PG student
55	Sajid Hussain	PG student
56	Abdul Rehman	PG student
57	Sarib Jamal	PG student
58	Saqib Mehmood	PG student
59	Dr. Mian Abdul Hafeez	Faculty
60	Dr. Muhammd Adnan Ashraf	Faculty
61	Dr. Adeel Sattar	Faculty
62	Dr.Muhammad Abu Bakr Shabbir	Faculty
63	Dr. Yasir Amin	Senior Research Officer
64	Dr. Muhammad Shahid	Research Officer
65	Zain-ul-Abideen	PhD scholar
66	Faizan	PhD scholar
67	Asif	PhD scholar
68	Hasnain Idrees	PhD scholar
69	Umer	Lecturer CVAS
70	Dr. Hanif UR Rahman	Research Officer
71	Dr. Nasir Mukhtar	Associate Professor
72	Dr. Zaib-Ur-Rehman	Lecturer
73	Dr. Farhan Farooq	PhD scholar
74	Dr. Warda Gill	Veterinary Officer
75	Dr. Imtiaz Ahmad Khan	Associate Professor
76	Dr. M. Zishan Ahmad	Assistant Professor
77	Dr. Farhan Anwar Khan	Assistant Professor
78	Dr. Faiz-Ur-Rehman	PhD scholar
79	Tayyeb Ullah	PG student
80	Dr. Salman Butt	Assistant Professor
81	Dr. Hafiz Muhammad Shahzad	Associate Professor
82	Zahra Zaman	Mphil Student
83	Dr. Beenish Zahid	Assistant Professor
84	Dr. Ashfaq Ahmad	Poultry Vet
85	Dr. Muzaffar Hussain	Poultry Vet

86	Komal Akhtar	PG student
87	Samia yaqoob	PG student
88	Asma Lateef	PG student
89	Dr. Syed Rizwan Ahmed	Merial, Saadat Int.
90	Dr. Aleem Iqbal	Merial, Saadat Int.
91	Dr. Farman Ullah Khan	Merial, Saadat Int.
92	Dr. Nadeem Shahid	Merial, Saadat Int.
93	Dr. Ali	Merial, Saadat Int.
94	Dr. Syed Faheem Ahmed	Lecturer
95	M. Yasir Arafat	PG student
96	Zubair Arshad	Area Sale Manager
97	Faiza Aslam	student phd
98	Syed Asfand Yar Bukhari	student
99	Dr. M. Umer Haider	BDM
100	Dr. Fida Hussain	Sales officer
101	Dr. Syed Zaeem Khalid	Nutritionist
102	Dr. Ayesha Nayab	Assistant Product Manager
103	Dr. Touheed Iqbal	Marketing Manager
104	Warda gill	Veterinary Officer
105	dr. Saima Masood	Faculty
106	M Shehzad	PhD scholar
107	Dr. Azhar Shaheen	employee livestock
108	Dr. Zia Ur Rehman	Marketing
109	Dr. Asif Masood	Veterinary Officer
110	Dr. Asghar	Veterinary Officer
111	Jahanzeb Aftab	Area Sale Manager
112	Dr. Sami Ullah	Veterinary Officer
113	Dr. Amad rashid	technical sale officer
114	Dr. Saba Badar	PhD scholar
115	Moni Khan	Sales Officer
116	Fizza	Sales Officer
117	Ammara	Sales Officer