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**Case Report**

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# Diagnosis and Treatment of Infectious Coryza in a Peacock (Pavo cristatus): A Case Report

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## ABSTRACT

Infectious Coryza (IC) is a contagious respiratory bacterial infection in peacocks. The current study evaluated the outcomes of treating infectious coryza in a peacock. The adult peacock at the age of 2 years was presented with a history of anorexia, difficulty breathing, sticky eyes, nasal and ocular discharge, and semi-solid swelling under the eyes. Clinical examination confirmed respiratory depression, a swollen head and face, gasping, occluded eyelids, sticky purulent discharge from the eyes and nostrils, moist rales, depression, and recumbency. Treatment included the use of injection of gentamicin, meloxicam, and multivitamins therapy, along with surgical debridement of facial edematous swelling. The peacock successfully recovered after 5 days of treatment. It was concluded that infectious coryza was a treatable disease, and an antibiotic sensitivity test was highly recommended for selecting a suitable antibiotic against bacterial infections.

## INTRODUCTION

The peacock is the male peafowl. The female peafowl is technically called a peahen, but many refer to the female peafowl simply as peafowl. The peafowl chick is called a peachick [1]. Infectious Coryza is an infectious and contagious respiratory bacterial disease affecting several avian species, particularly poultry, peacocks, and other game birds. The disease initially presents as acute to sub-acute but can progress to a chronic state as it spreads through the flock [2]. IC is caused by the bacterium *Haemophilus paragallinarum.* This disease is characterized by clinical signs such as respiratory distress, purulent nasal and ocular discharge, swollen head and face, gasping, dullness, occluded eyelids, depression, and anorexia [3]. *Haemophilus paragallinarumis* is a Gram-negative, non-

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motile, and polar-staining bacterium. The Indian Peafowl belongs to the family Phasianidae (also known as pheasants) and their order is Galliformes [4]. The chicken (Gallus gallus) is the natural host for *Haemophilus paragallinarum*. This bacterium affects birds of all ages. The disease is mostly transmitted via drinking water contaminated with nasal exudates containing infection. Infection may also spread via direct contact and airborne resources such as infected dust and water droplets [5]. The current study was designed to evaluate surgical and medical treatments for IC, including microbiological and histopathological assessments. Case Report: An Indian Blue Peacock of 2 years came to the outdoor surgery clinic at the University of Veterinary and Animal Sciences (UVAS), Lahore, Pakistan. The patient's history included labored breathing, anorexia, nasal and ocular discharge, sticky eyes, and semi-solid swelling under the eyes. Clinical signs of the infection were scored and are presented in table 1 [6].

**Table 1:** Clinical Signs of Infectious Coryza

| Disease Name | Grade | Clinical Signs |
|---|---|---|
| Infectious Coryza | Grade 0 | No signs |
| | Grade 2 | Conjunctivitis with Partial Closure of Eye, Swollen Infraorbital Sinus |
| | Grade 3 | Conjunctivitis with Closure of Eye, Obvious Swelling of Periorbital and Paranasal Sinus |
| | Grade 4 | Conjunctivitis with Complete Closure of Eye, Sticky Eyes, Marked Swelling of Periorbital and Paranasal Sinus, Swollen Head, Facial Edema, Gasping and Moist Rales |

A clinical examination and signs include swollen head and face, respiratory distress, occluded eyelids, gasping, sticky purulent ocular and nasal discharge, depression, moist rales, and recumbency (Figure 1).

**Figure 1:** The Swollen Face of Infected Peacock

A surgical approach was recommended to remove the caseous mass from under the eye area. The peacock was restrained, the hair under the eye was clipped, and the surgical site was scrubbed with gauze dipped in 5% methanol (Methylated Spirit®, Oval Pharma®, Pakistan). Local anesthesia using 2% lignocaine with epinephrine (Medicain®, Huons Co. Ltd®, South Korea) with a dose of 1mg/kg was administered around the affected area to reduce pain. An elliptical incision was made, and the caseous mass was removed. Extra skin was also excised and removed. Bleeding was controlled using a tincture of benzoin (Tinct Benzoin Co®, Oval Pharma®, Pakistan) (Figure 2). The tincture of benzoin has adhesive, dehydrating, and antiseptic properties.

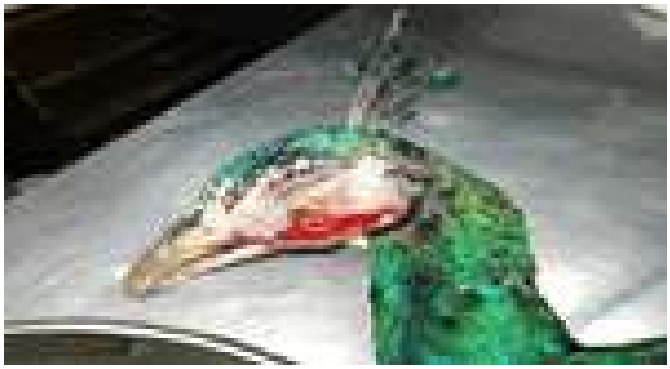

**Figure 2:** Removal of Caseus Mass

In figure 3, they removed mass indicating the extent of tissue excised during surgical intervention. The sampling was done by taking swabs from eyes, nostrils, and mouth with the help of a platinum loop for microbial isolation, identification, culture, and antibiotic sensitivity test. Antibiotic sensitivity testing was done using the disc diffusion method. A bacterial sample was collected and swabbed onto a Petri dish containing chicken serum, followed by cross streaks of Staphylococcus aureus as a Nicotinamide Adenine Dinucleotide (NAD) provider for the medium. The Petri dish was then incubated at 37°C for 24 hours. Antimicrobial discs containing gentamicin were placed on the plate, and the zone of inhibition was measured after 18 hours of incubation. Gram staining was done. A sample of the caseous mass collected was also used for histopathological examination. All samples were sent to the University Diagnostic Lab (UVAS). Pending the laboratory results, the peacock was treated with intramuscular injection of gentamicin (Gentafar®, Farvet Lab, Netherland) at 4.4 mg/kg of body weight, and meloxicam (Diclostar®, Star Lab, Pakistan) at 0.2 mg/kg three times in a day, and orally with orange juice, vitamin A, and multivitamin drops [7].

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**Figure 3:** Removed Mass

In figure 4, gram's staining of swab sample showing *Haemophilus paragallinarum* under a light microscope with magnification 1000x and scale bar 10 µm.

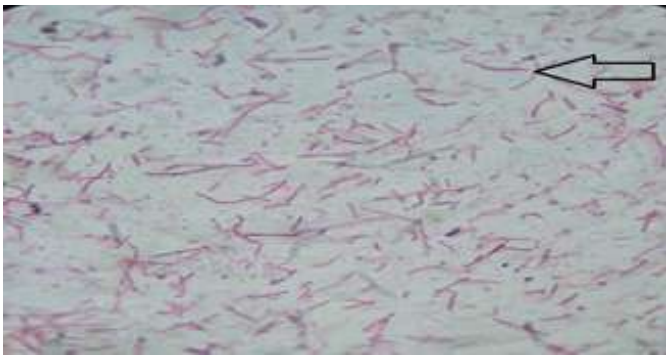

**Figure 4:** Gram Staining of *Haemophilus paragallinarum* in Swab Sample at 1000x Magnification

In figure 5, Hematoxylin and eosin (H and E) staining of the trachea reveals significant pathological changes under 100x magnification with a 10 µm scale bar. Panel A illustrated the disruption of cilia, indicating damage to the respiratory epithelium. Panel B showed infiltration of neutrophils, highlighting an acute inflammatory response, while Panel C demonstrated edema, reflecting fluid accumulation in the tissue.

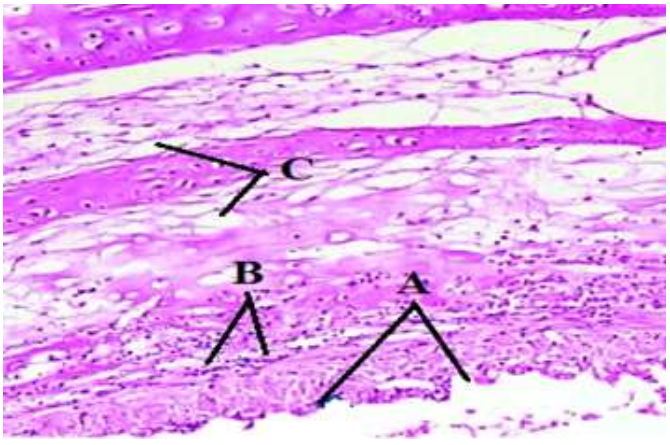


**Figure 5:** H and E Staining of Trachea: Disruption of Cilia (A), Neutrophil Infiltration (B), and Edema (C) at 100x Magnification (Scale Bar: 10 µm)

In figure 6, the antibiotic susceptibility test for *Haemophilus paragallinarum*, the causative agent of infectious coryza, evaluates the effectiveness of gentamicin in inhibiting bacterial growth. The test involves inoculating a culture medium with the bacterial strain and applying varying concentrations of gentamicin. After incubation, the zones of inhibition are measured to determine the antibiotic's efficacy.

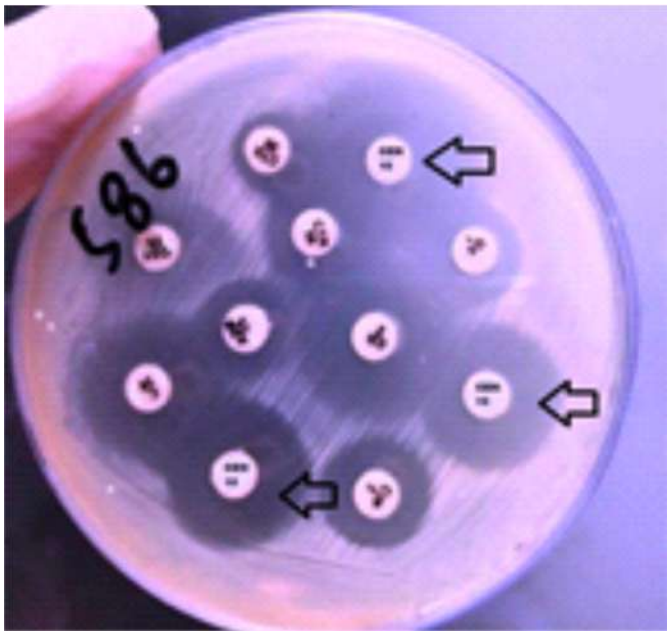

**Figure 6:** Antibiotic Susceptibility Test for Infectious Coryza against Gentamicin

## DISCUSSION

In the current case study, the clinical examination of the peacock confirmed oculonasal discharge, conjunctivitis and discharge, facial edema, respiratory noise, mucoid rales, swollen infraorbital sinus, and exudates in the conjunctival sac in chickens. The laboratory examination revealed the presence of *Haemophilus paragallinarum* on blood agar with Gram staining. The Gram-negative rods were observed beneath a light microscope. These findings were consistent with the results of [8]. In another study of chickens, the documented clinical signs included respiratory distress, gasping, swollen head and face, occluded eyelids, purulent nasal and ocular discharge, anorexia, moist rales, depression, and recumbency [9]. The clinical signs of IC revealed extensive inflammatory lesions, which can result from complications because of *Avibacterium spp*. Other bacteria such as *Klebsiella*. Pneumonia supports the severity of infectious coryza with the mortality rate in chickens from 0.7% to 10% [10]. Other studies showed clinical signs including secretion of purulent and watery nasal and eye discharge, swelling of the infraorbital sinus and face, edema of the head, air

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vasculitis, conjunctivitis, fetid odor from the conjunctival sac filled with exudates, dyspnea, anorexia and inflamed wattles [11]. The treatment included the antibiotic gentamicin, which was continued for 5 days after confirmation of the antibiotic sensitivity test, and the Non-Steroidal Anti-Inflammatory Drug (NSAID) meloxicam along with multivitamins, used for 5 days at a frequency of three times a day. The signs began to reduce in 3-4 days, and the peacocks recovered fully after a week. Similar results were reported in a study of peacocks [6]. In another study, after five days of treatment, there was a significant regression of facial swelling and total absence of respiratory distress in peacocks [12]. The bacterium was sensitive to gentamicin, neomycin, erythromycin, lincomycin, pectinomycin, oxytetracycline, ciprofloxacin, tylosin, and azithromycin [13]. Histopathological examination of the trachea revealed that the respiratory tract was disintegrated, with disruption of epithelia and cilia, edema, and infiltration of neutrophils and macrophages. These results were according to [14]. The histopathological lesions including deciliation and tracheitis were observed in the lungs and trachea of affected birds which showed marked interstitial pneumonic changes. These changes are associated with complex and chronic cases of IC [15]. The infraorbital sinus was found with heterophilic granulocytes and infiltration of macrophages. Also, there was severe head edema and hemorrhages of the nasal cavity. The trachea showed lodging, adhesion, and partial exfoliation of cilia. The mucosal edema in the lamina propria and inflammatory cell infiltration were also found [16].

## CONCLUSIONS

It was concluded that infectious coryza was a curable disease. The effective treatment could include surgical debridement and excision of facial purulent and edematous swelling, along with using antibiotic gentamicin, non-steroidal anti-inflammatory drug meloxicam, and multivitamins as supportive therapy. It can result in the successful recovery of the peacock from infectious coryza disease. An antibiotic sensitivity test could be very useful in the selection of a suitable antibiotic for bacterial infections.

## Authors Contribution

Conceptualization: FUR
Methodology: MA[1]
Formal analysis: MM
Writing, review and editing: FUR, KA, SM, P, MM, ZU, AMAK, BR, MA[2]
All authors have read and agreed to the published version of the manuscript.

## Conflicts of Interest

All the authors declare no conflict of interest.

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