



ISSN (E): 2277-7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2022; SP-11(7): 2497-2499
© 2022 TPI
www.thepharmajournal.com
Received: 13-04-2022
Accepted: 22-05-2022

Savita Meena
Department of Animal
Husbandry, VO, Regional
Animal Disease Diagnostic
Centre, Chetak Circle, Udaipur,
Rajasthan, India

Mukesh Meena
Department of Animal
Husbandry, Govt. Veterinary
Polyclinic, Bundi, Rajasthan,
India

Mamta Meena
Govt. Veterinary Polyclinic,
Baran, Department of Animal
Husbandry, Rajasthan, India

Hemant Dadhich
Professor and Director
Research, CVAS, Bikaner,
Rajasthan, India

Corresponding Author
Savita Meena
Department of Animal
Husbandry, VO, Regional
Animal Disease Diagnostic
Centre, Chetak Circle, Udaipur,
Rajasthan, India

Pathological and bacteriological studies of Panniculitis

Savita Meena, Mukesh Meena, Mamta Meena and Hemant Dadhich

Abstract

In the present study 304 skin samples showing macroscopic lesions from different age, sex and breeds were collected to identify various type of dermatitis in poultry from different areas of Rajasthan, Further analysed to determining the pathological and bacteriological aspects of different types of dermatitis. Panniculitis was recorded in 27 cases of dermatitis in poultry. Histopathological changes revealed inflammatory infiltration in interlobular connective tissue septa and fat lobules. *S. aureus* and *E. coli*. Organisms were isolated from samples.

Keywords: Panniculitis, dermatitis, poultry, histopathology, bacteriology

Introduction

The poultry farming in India occupies an important position due to its enormous potential to bring about rapid economic growth, particularly benefiting the weaker sections due its low investment requirement and short gestation period. The growth potential of this sector is bright due to regular flow of income throughout the year in the rural economy of the India. Among the livestock sector Poultry industry contributes about Rs. 125 lakh Cr accounting for about 1 per cent of the national GDP and about 14% of the Livestock GDP (Pashudhan Praharee Sept 2016) [8].

In livestock 12.5 per cent by poultry products (FAO Statistical Book, 2011). Poultry sector provides employment to over Six million people in the Country. Poultry sector is dubbed as the one having highest employability per unit of investment among all the livestock sectors.

Skin infections in poultry also have a zoonotic importance. The skin infections are caused by bacteria, viruses, parasites, fungi and other environmental factors like nutritional deficiency, allergy, burn, radiation etc. Among skin infections, dermatitis is a common problem associated with deep litter system of rearing.

Materials and Methods

The Skin samples for proposed investigation were collected from various poultry farms of different areas of Rajasthan. The tissue specimen were also collected from the carcasses submitted for post-mortem examination to the field veterinarians and from the department of Veterinary Pathology, College of Veterinary and Animal Science, Bikaner for routine post-mortem examination.

The tissue samples were collected for histopathological work in 10 per cent formalin and processed manually for paraffin embedding by acetone and benzene technique (Lillie, 1965) [6] for histopathology. Tissue section of 4-6 micron thickness were cut and stained with haematoxylin and eosin staining technique as a routine.

For bacteriology the skin swabs / samples were collected aseptically on sterile nutrient broth and culture & identification of bacteria was done on the basis of culture and morphological characteristics as per standard method (Carter, 1984) [1].

Results: This condition was recorded in 27(8.88 per cent) cases.

Pathological Studies

Grossly, there was presence of large amount of subcutaneous fat and nodule formation along with greenish blue discolouration of skin (Fig.1).

Microscopically, the section showed septal panniculitis was characterized by inflammatory infiltration of mononuclear cells in the interlobular connective tissue septa (Fig.2). In lobular panniculitis there was presence of polymorphonuclear and mononuclear infiltrating cells in the fat lobules (Fig.3).

Cellular infiltration was noticed in both interlobular septa and fat lobules in cases of diffuse panniculitis. Few cases revealed presence of haemorrhage along with polymorphonuclear and mononuclear cells infiltration (Fig.4).

Bacteriological studies

Various bacterial organisms isolated from the samples of panniculitis were *S. aureus* and *E. coli*.

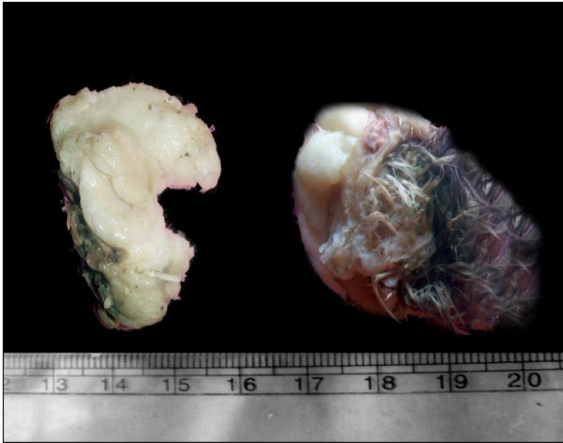


Fig 1: Gross Photograph showing excessive fat deposition and nodule formation

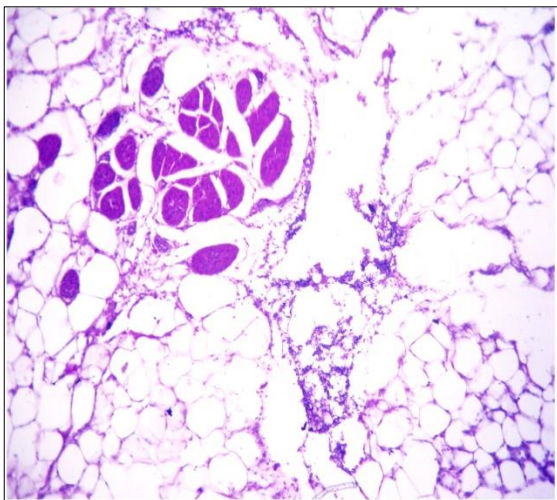


Fig 2: Photomicrograph showing septal panniculitis along with mononuclear infiltration predominantly of lymphocytes. H. & E. 100X

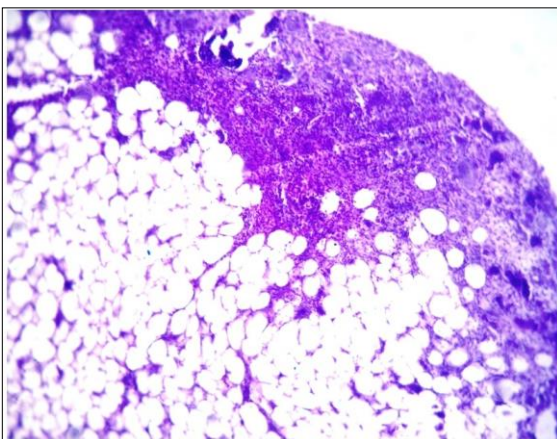


Fig 3: Photomicrograph of skin having epidermal hyperplasia and hyperkeratosis. H. & E. 400X.

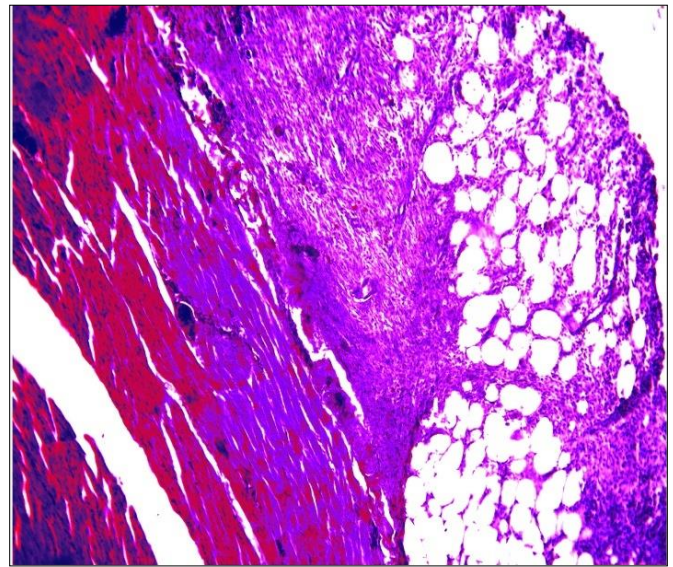


Fig 4: Photomicrograph showing areas of panniculitis along with polymorphonuclear and mononuclear cells infiltration and hemorrhage. H. & E. 100X



Fig 5: Photograph of Blood agar plates showing yellow coloured colonies of *Staphylococcus aureus*

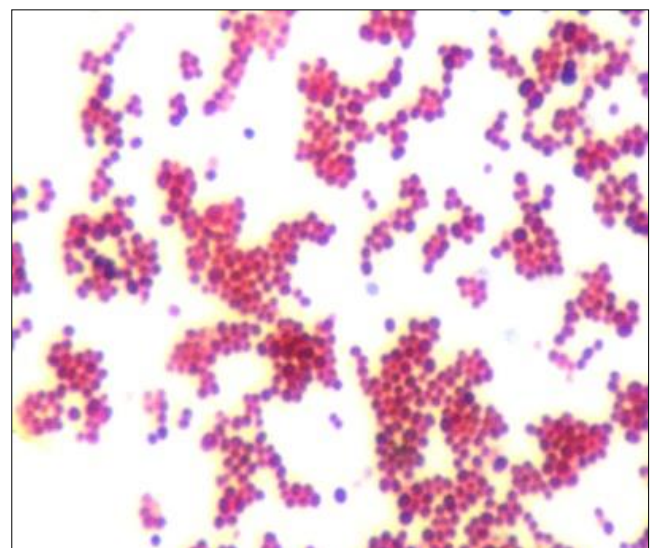


Fig 6: Photomicrograph of *Staphylococcus aureus* isolated from skin sample. Gram's staining

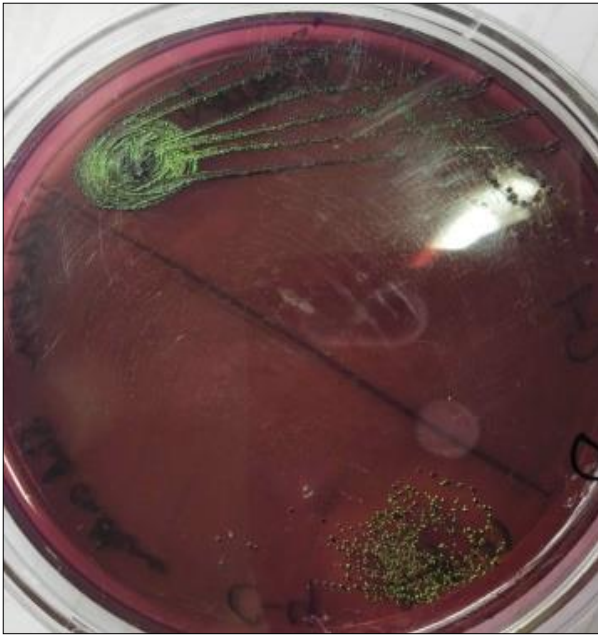


Fig 7: Photograph of Eosine Methylene Blue (EMB) agar petriplates showing metallic sheen of *Escherichia coli* bacteria.



Fig 8: Photomicrograph of *E. coli* isolated from skin sample. Gram's staining.

Conclusion

In panniculitis there were presence of Polymorphonuclear and mononuclear infiltrating cells in interlobular connective tissue septa and subcutaneous fat tissue, in most of the cases

Discussion

The gross and microscopic alterations observed for panniculitis were in agreement with the description of Francisco *et al.* (2020) [2] in captive brent goose, William *et al.* (2020) [9] in huma beings, Jubb *et al.* (2007) [5] in domestic animals. Authors reported gross characteristics such as subcutaneous nodules having fluctuating swelling.

Their microscopic features revealed areas of septal (Dirk M. Elston, 2014) and lobular panniculitis along with infiltration

of polymorphonuclears and mononuclear cells (James *et al.* 2021) [4]. Above findings may be due to extension of dermal inflammatory process in the subcutaneous fat.

Rajeshwari *et al.* (1995) [7] isolated *Staphylococcus aureus*, *Clostridium septicum*, *Clostridium perfringens* and *E. coli* from poultry skin lesions, which were in agreement of present bacteriological study.

References

1. Carter GR. Diagnostic Procedure in Veterinary Microbiology. 2nd Ed. Charles, C. Thomas Publishers, Springfield, 1984.
2. FAO Statistical Book, 2011
3. Francisco A Uzal, Mauricio A Navarro, Jesse M Hostetter. Sterile traumatic panniculitis in a captive Brent goose, Journal of Veterinary Diagnostics and Investigation. 2020 Mar;32(2):336-338.
4. James W. Patterson MD, FACP, FAAD, in Weedon's Skin Pathology, Practical dermatopathology 3rd edition, 2021, 233-239
5. Jubb KVF, Kennedy PC, Palmer N. Pathology of Domestic Animals. 5th edn. Academic Press, Inc. London, U.K, 2007.
6. Lillie RD. Histopathological technique and Practical histochemistry, McGraw Hill Book co., NewYork and London, 1965.
7. Rajeswari R, Rao SM, Upadhye AS. Epidemiological and bacteriological studies on wing-rot infection in poultry. Current Research - University of Agricultural Science (Bangalore). 1995;24:65-67.
8. Singh R. Poultry Sector of India can Play A Pivotal Role In Solving The Present Economic Slowdown Crisis., September Ed. Pashudhan Praharee, 2019.
9. William D, James MD. Andrews' Diseases of the Skin, 13th edition, Elsevier, 2020.