UNIVERSITI PUTRA MALAYSIA

RETROSPECTIVE STUDY ON THE PATHOLOGICAL CHANGES AND BACTERIAL ISOLATIONS IN SMALL RUMINANTS DIAGNOSED WITH PNEUMONIA

MUHAMAD ALIF BIN ZAKARIA

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MUHAMAD ALIF BIN ZAKARIA

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It is hereby certified that I have read this project paper entitled “Retrospective Study on the Pathological Changes and Bacterial Isolations in Small Ruminants Diagnosed with Pneumonia”, by MuhamadAlif Bin Zakaria and in my opinion it is satisfactory in terms of scope, quality, and presentation as partial fulfillment of the requirement for the course VPD 5908 – Project.

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PROF. DR. ZAMRI SAAD
DVM (UPM), PHD (LIVERPOOL),
Lecturer,
Faculty of Veterinary
Medicine Universiti
Putra Malaysia
(Supervisor)

This thesis is especially dedicated to:

My loving father, Zakaria Bin Osman, my caring mother SitiMeriamBintiBakar

and

family, who are infinitely precious to me,

&

Ida AmalinaBintiMahadi, who has filled my life with joy and happiness,

&

My friends, who were there for me!

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ABSTRAK

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KAJIAN RETROSPEKTIF PERUBAHAN PATOLOGI DAN PEMENCILAN BAKTERIA DARIPADA PARU-PARU RUMINAN KECIL

Oleh

MuhamadAlif Bin Zakaria

2018

Penyelia: Prof. Dr. MohdZamriSaad

Penyebabdanjenisradangparu-parudalamruminankecilbelumdilaporkan di Malaysia. Olehitu, adalahpentinguntukmenyiasatkadarkejadiandanjenisradangparu-paru yang lazimdiperhatikan. Penyiasataninidijalankankeatas 94 kes pneumonia daripada 299 kesruminankecil yang dibuatnekropsi di JabatanPatologi&MikrobiologiVeterinar, Universiti Putra Malaysia, dalamtempoh 10 tahundari 2008 - 2017. Lesikasardanhistopatologisertajenisbakteria yang berjayadiasingkantelahdiperolehidarirekod. Diagnosis keradanganparu-parudibuatmelaluipemeriksaanhistopatologimenggunakanteknik standard. Hasilpemencilanbakteria (n = 134) menunjukkan*Escherichia coli* (29.1%), *Pasteurella* spp. (17.1%), *Klebsiellapneumoniae* (15.6%), *Staphylococcus aureus* (6.7%) dan*Mannheimia* spp. (5.9%) adalahantara yang kerapdipencil. Lesikasarpadaparu-parutermasuklahkesesakan, pengerasandaneksudasi. Tigajenisradangparu-parutelahdikenalpastiberdasarkanpemeriksaanhistopatologiadalahbronkopneumoniabernanah

71 (75.53%), bronchopneumonia berfibrin 7 (7.45%), pneumonia perantara 3 (3.19%) dan lain-lain 13 (13.93%).

Kata Kunci: *Ruminankecil, radangparu-paru, bakteria, lesipatologi.*

ABSTRACT

An abstract of the project paper presented to the Faculty of Veterinary Medicine in partial fulfillment of the course VPD 5908 - Project.

RETROSPECTIVE STUDY ON THE PATHOLOGICAL CHANGES AND BACTERIAL ISOLATIONS IN SMALL RUMINANTS DIAGNOSED WITH PNEUMONIA

by

MuhamadAlif Bin Zakaria

2018

Supervisor: Prof. Dr. MohdZamriSaad

The cause and type of pneumonia in small ruminant have not been reported in Malaysia. Hence, it is imperative to investigate the incidence and type of pneumonia commonly observed in small ruminants. This investigation was carried out on 94 pneumonic cases involving 299 small ruminant carcasses presented for necropsy at the Department of Veterinary Pathology & Microbiology, Universiti Putra Malaysia, during a 10-year period between 2008 and 2017. The gross and histopathology lesions and the associated bacterial isolations were obtained from the records. The specific type of pneumonia was diagnosed by histopathological examination of selected lungs tissues, using standard techniques. The results of the bacterial isolates (n=134) revealed *Escherichia coli* (29.1%), *Pasteurella* spp. (17.1%), *Klebsiellapneumoniae* (15.6%), *Staphylococcus aureus* (6.7%) and *Mannheimia* spp. (5.9%) as common isolates. The gross lesions of pneumonic lungs included congestion, consolidation and exudation.

Three types of pneumonia were identified based on the histopatholological examinations, which were suppurative bronchopneumonia 71 (75.53%), fibrinous bronchopneumonia 7 (7.45%), interstitial pneumonia 3 (3.19%) and others 13 (13.93%).

Keywords: *Caprine, Ovine, pneumonia, bacterial flora, pathology.*

1.0 Introduction

Small ruminants such as goats and sheep have the potential to be developed into an industry in Malaysia. This ensures adequate food supply for the country, hence reduces the cost of meat importation (Kaur, 2010). The small ruminant industry can be profitable because Malaysia is still highly dependent on meat and dairy products from Australia. With the development of goat breeding by local breeders, the cost of importations can be reduced. Thus, providing great opportunity for small farm producers to target these markets and diversify their farm products.

The growth of small ruminant industry in Malaysia is gradual due to several challenges, which include improving the management of the flocks to reduce mortality and enhance production, and widening its marketability. Diseases affecting livestock impose a major threat within livestock production systems. According to Ackermann and Brodgon (2000), diarrhea and respiratory diseases (pneumonia) are the leading causes of death in goats. Pneumonia can cause severe economic losses to farmers. It is a disease complex, which is due to non-infectious or microbial determinants including bacteria, viruses, and fungi.

1.1 Justification

Pneumonia is a common respiratory disease of economic importance in small ruminants. This study highlights the type of pneumonia often developed in small ruminants in Malaysia, focusing on the gross and histological lesions as well as the bacteria isolated from cases of pneumonia of small ruminants.

1.2 Objectives

The objectives of this study are:

1. To determine the types of pneumonia and their associated gross and histological changes suffered by small ruminants presented at the Post-mortem Laboratory, Faculty of Veterinary Medicine, Universiti Putra Malaysia.
2. To report the common bacteria isolated form cases of pneumonia in those small ruminants.

1.3 Hypotheses

The hypotheses of this study are:

1. There are different pathological changes in different pneumonic cases in small ruminants.
2. Different bacteria can be isolated from cases of pneumonic in small ruminants.

2.0 Literature Review

2.1 Importance of small ruminants in Malaysia

Goat, *Capra aegagrushircus* and sheep, *Ovisaries*are two of the many small ruminants in Malaysia. Simple feed sources, which are grass and water make these animals with strong potential to grow as a livestock industry in the Malaysia (Kaur, 2010). Compared with cattle rearing, goats and sheep breedings do not require large area. They can easily adapt to the environment and quite flexible. They show high birth rate, weight gain and high performance,

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