



A STUDY OF SOME PATHOLOGICAL LESIONS IN THE LUNG OF SHEEP AT KHANAKIN ABATTOIR

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ABSTRACT

An abattoir study was conducted on 900 sheep are slaughtered in Khanakin abattoir, from December to February 2017. The objective was to determine the prevalence of disease conditions affecting the lungs. Routine meat inspection procedures were done to detect the presence of the pathological lesions. A total of 900 of sheep were examined and the main condemned diseases in this study were recorded as namely pneumonia. From this study the pathological features was concluded that 3 main forms of different types of pneumonia which recorded according to macroscopically and histological features.

KEYWORDS: sheep, Khanakin abattoir, pathological lesions, pneumonia.

INTRODUCTION

Respiratory diseases are common in all species of domestic animals, and they are appear due to the interaction of many of infectious agents like (bacteria, mycoplasma, viruses, fungi, parasite, host defense and environmental factors which are causes high mortality rate and economic losses associated with respiratory diseases of sheep and goats^[1, 2, 4].

The main respiratory disease is occur due to inflammation of the lung tissues called pneumonia which is widespread among sheep and goat all over the world and it is considered to be one of the most important causes of losses in the small ruminant industry^[9, 11]. Sheep and goats are regarded as the most principal slaughtered animals for human consumption in Diala province and due to a differentiation of the geographic location, nutrition and climate are determining factors on the type of microorganism causing pneumonia. In addition, rearing systems, stress factors, climatic changes, unhygienic conditions, sudden changes in feed and a low level of herd health status are stated as predisposing factors to bacteria, parasites and viruses infection which are recorded the one common cause of lung lesions and death of infected animals, therefore, the aims of this work are to determine the common pathological lesions of pulmonary tissues in sheep at Khankin abattoir in Diala provaince of Iraq.

MATERIALS & METHODS

Data collection

In this study, data collected from 900 sheep were

slaughtered at Khanakin abattoir during three months of the study was extended from December 2016 to February 2017. All pulmonary tissues are inspected the presence of different pneumonic lesions using case history, gross macroscopically inspection and recorded of the results. Twenty pulmonary tissue samples were suspected to any pathological lesions with 5 normal once were subjected to histopathological technique at Baghdad histopathological Center, Faculty of Veterinary Medicine- University of Baghdad.

Histopathological study

Pulmonary tissue samples about 1 cm 3 in thickness were directly taken from different lesions using a sterile scalpel and were fixed with 10% of neutral-buffered formalin for histopathological examination. The samples were then dehydrated in graded ethanol, clearance with xylene, embedded in paraffin as blocks and sectioning from blocks were cut at 4-5µm in thickness using rotary microtome (Leica, Germany). Finally, the samples were stained with Haematoxylin and Eosin stains^[3] for examination using ordinary light microscope to taken the photography (Lecia, Germany).

RESULTS

On the basis of gross macroscopic inspection survey, the inflammatory lesions were found 856 (3.8 %) samples in sheep and 115 (3.1) samples in goats. In addition, hydatid cysts were appeared in 1998 (3.9 %) and 43 (1 %) samples in sheep and goats respectively (Table: 1).

TABLE 1: The number of slaughtered animals in abattoir with lung lesions

Species	Examined animals	Pulmonary inflammatory lesions
Sheep	900	65 (7.2%)

Pulmonary lesions were appeared in most of the different seasons with varying degrees, but at December showed the presence of the pulmonary lesions as high rates 5.5 %. Generally, the results of prevalence of the respiratory

diseases showed in sheep are more common. The results of the study according to months and species of animals were seen in Table (2).

TABLE 2: The number of slaughtered animals in abattoir with lung lesions by months

Animal species	Months of study	Examined animals	Pulmonary inflammatory lesions
Sheep	December	534	35(6.5%)
	January	267	23 (8.6%)
	February	99	7 (7.1%)
Total		900	65 (7.2%)

Pathological observation of lung lesions of sheep

In the current study, a total of 20 samples of pulmonary tissues were found 18 samples affected with pathological lesions. According to macroscopic appearance (texture, exudation, distribution and sites of lesions) and microscopic findings of lesions, the samples were classified to different types of pneumonia. The pathological observation of the lung lesions included:

Suppurative bronchopneumonia

The results showed 58.6 % of samples were diagnosed as suppurative bronchopneumonia according to gross and histological features. The gross appearance of the lung

showed irregular shape of effected parts and consolidation varied from dark red to grey-pink (Figure: 1). The gross appearance of the affected area of the lung appeared moist and purulent exudates leaked from bronchi and some abscission of foci scattered throughout the affected part. Microscopically, alveolar spaces and lumens of the air ways are filled with inflammatory exudates and inflammatory cells mostly neutrophils, debris, and severe congestion was observed in these areas. Due to complete or partial obstruction of the airways some of the lobules showed atelectasis and/or emphysema (Figure: 2)



FIGURE 1: Gross appearance of lung showed pale and discharge from bronchi

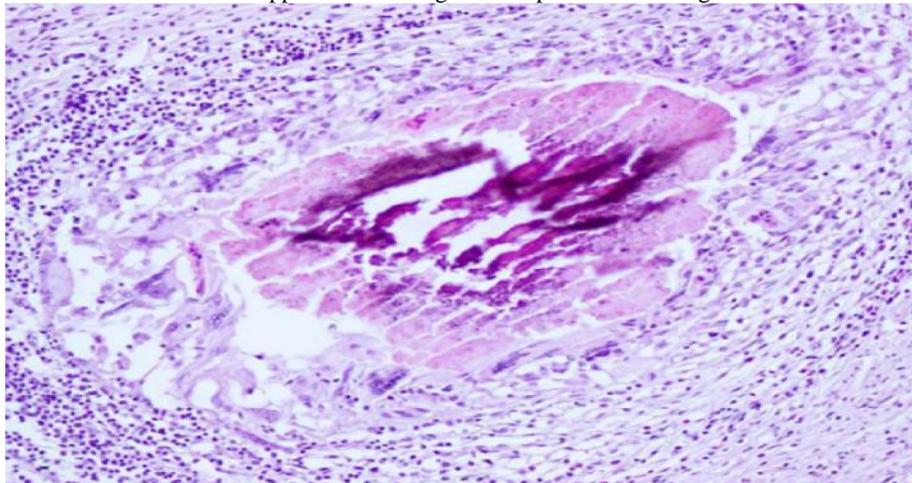


FIGURE 2: Alveolar spaces and lumen of the bronchi are filled with inflammatory exudates and inflammatory cells mostly neutrophils, debris, fibrin, were observed in these areas, arrow-10x H&E.

Fibrinous bronchopneumonia

Fibrinous bronchopneumonia was detected in 27.8% of the examined lungs samples. Macroscopically, lesions appeared irregular shape and color changed of some fibrin sheath which covered the surface of the lung and sometimes inside of the bronchi (Figure 3). Microscopically, the affected lungs were characterized by

diffuse capillary congestion, presence of multifocal areas of necrosis, variable amounts of fibrinous exudates also present in the lumen of the alveoli and bronchioles with thickening of the interlobular septa and pleura due to inflammatory exudates, inflammatory cells and edema (Figure 4).



FIGURE 3: lung surface showing irregular shape whitish to yellowish color of fibrin as a layer covered the lung surface.

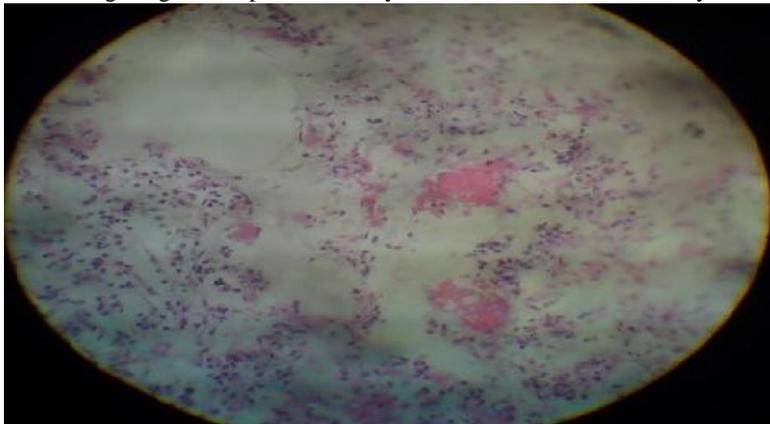


FIGURE 4: there are amounts of fibrinous exudates with sever infiltration of acute inflammatory cells. 10x H&E



FIGURE 5: interstitial pneumonia and the lung has consolidation area

Interstitial pneumonia: this is appear in 13.6% of the total cases. Macroscopically there is thickness of the alveolar wall and congestion in the external appearance of

the lung (figure 5). Microscopically, the is neutrophils in small numbers with the congestion of blood vessels (figure 6).

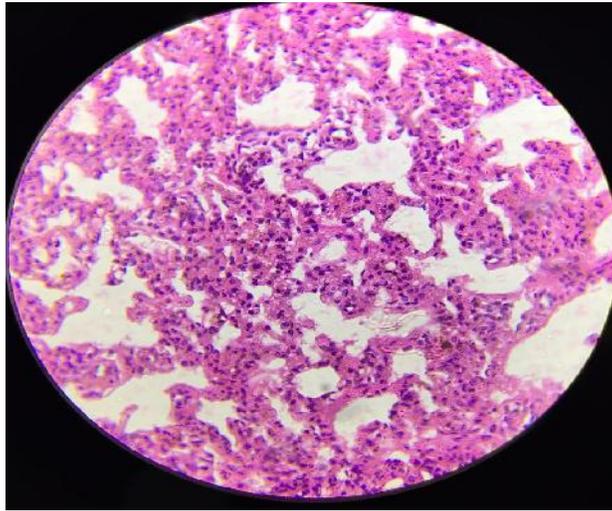


FIGURE 6: the lung show thickness in the alveolar wall.

DISCUSSION

Respiratory diseases are common in various species of domestic animals particularly in sheep and goats causes very significant economic losses including lost trade on the sheep industry, high mortality rate as well as costed of diagnosis and treatment (6). The evaluated of prevalence, onset of lung lesions, their impact on growth of animals species which showed that severe lung lesions could lead to greatly decreased growth performance of the animals (7). Different types of pneumonia were observed in this study using macroscopical and histopathological examination of the lung samples which chose during this study, including suppurative bronchopneumonia, fibrinous bronchopneumonia and interstitial pneumonia, this variation in the prevalence rates of different types of pneumonia in small ruminants in different study also may attributed to the factors variation such as nutritional status, breed, nature of country and environmental conditions. In addition of the effect of stressors including transportation and overcrowding, all these factors could possibly play a constructive role in predisposing factors for the development of different types of pneumonia (5-9). Results also revealed that the highest percentage of suppurative pneumonia was recorded in sheep (58.6%) This may explained by the differences of countries geography, time of study conducted or a result of cool weather, unrestricted, and careless for management and importation of animals from different parts of the world to our country. In conclusion, a number of inflammatory diseases of the lung disease according to this study changes in affected areas indicated the types, extent of pathological change occurred, the agent involved and responsible for the development of different diseases of the lung.

REFERENCES

- [1]. Lacasta, D., Ferrer, L.M., Ramos, J.J., Gonzalez, J.M. and De Las Herasc, M. (2008) Influence of climatic factors on the development of pneumonia in lambs. *Small Rumin Res*, 80:28-32.
- [2]. Roy, J.H.B. (1990) *Respiratory infections in the calf, management of health*. Ed. by Roy, T.H.B. Butter worths, London. Pp. 132-153.
- [3]. Bancroft, D.J., Cook, C.H., Striling, R.W. and Turner, D.R. (1996) *Manual of histological technique and their diagnostic applications*. Churchill Livingstone, NewYork.
- [4]. Mohammed, Y., Hailu, M. and Mersha, C. (2012) Histopathological and bacteriological examination of pneumonic lungs of small ruminants slaughtered at Gondar, Ethiopia. *American-Eurasian J. Sci. Res.* 7 (6): 226-231.
- [5]. Daniel, J.A., Held, J.E., Brake, D.G., Wulf, D.M. and Epperson, W. (2006) Evaluation of the prevalence and onset of lung lesions and their impact on growth of lambs. *Am. J. Vet. Res.* 67 (5): 890-894.
- [6]. Shahrzad, A., Farzad, K. and Ahmad, O. (2013) Pneumonia in slaughtered sheep in south-western Iran: pathological characteristics and aerobic bacterial aetiology, *Veterinaria Italiana*, 49 (1):109-118.
- [7]. Ezzi, A., Moradi, B., and Jabbari, A. (2007) Survey on pneumonic pasteurellosis in slaughtered sheep and goats at the Ziaran abattoir. *Archives of Razi Institute*, 62(4): 235-239.
- [8]. Hala, F., Fadel, N. and El-Shorbagy, M. (2009) Bacteriological and pathological studies on the causes of mortalities among sheep in Sharkia-Governorate farms. *Egypt. J. Comp. Path. & Clinic. Path.* 22(1): 130 – 146.
- [9]. Ertan, O. (2006) The Pathologic and Bacteriologic Comparison of Pneumonia in Lambs. *Turk. J. Vet. Anim. Sci.* 30: 593-599.