

# Research Journal of Pharmaceutical, Biological and Chemical Sciences

## Classification and Frequency of Ovine Pulmonary Lesions in Tiaret's Slaughterhouse.

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### ABSTRACT

This work was conducted at Tiaret slaughterhouses (west of Algeria), aimed to investigate pneumonia and its frequency. Pneumonia is considered to be one of the most important sheep diseases. The partial or total seizures organs by veterinary services during inspection constitute a real constraint for butchers from the economical point of view. Results of a study carried within two years in Batna and Tiaret slaughterhouse have shown a high frequency of pathological pulmonary lesions in 2863 ovine lungs that were inspected. 797 lungs were concerned by these lesions. The seasonal impact of the lesions has been highly marked. The pulmonary congestion most frequently observed lesion with 209 cases (7.50%). According to the localization of these lesions, we have noted that the right lung was the most affected than the left one, and the cranial lobes were more attacked than the caudal ones.

**Keywords:** Frequency; Lesion; Lung; Ovine.

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## INTRODUCTION

The respiratory diseases constitute a serious and major problem as well as for breeders than for veterinarians, because of the major economic losses they cause, and the expenses of the care and preventions that they generate. This work has been achieved in Tiaret slaughterhouses (Algeria), in order to evaluate the impact of the various ovine pulmonary diseases in these regions.

Lungs are the most exposed organs to different aggressions because of their anatomical and histological particularities. The deterioration of the hygienic conditions is the most important factors that aggravate and promote pulmonary diseases.

In Algeria, we do not have any precise statistics on pulmonary diseases frequency, and no deepened survey has been led on their epidemiology. However, it appeared interesting for us to lead an investigation on these pulmonary diseases from information's taking at slaughterhouses in order to well know them and especially to determine their real prevalence.

## MATERIAL AND METHODS

The survey has been led in Tiaret's slaughterhouse. Two major reasons motivated the choice of this slaughterhouse: this accessibility and the concentration of slaughtering especially in the town of Tiaret.

### Organization and working

Animals are slaughtered and eviscerated on floor. The hours of working are very variable. The number of ovine slaughtered per day is variable. The investigation has been done on 2863 ovine of different ages and sexes. These animals are generally originated from this town or come from the south or the west. For every animal, the lungs were carefully examined in this work. The determination of age and sex was part of this survey.

### Collection of the samples

Scheduled visits have been done previously at the level of this slaughterhouse. Inspection of lungs has been done within two years in Tiaret, according to a special calendar taking in account the working time of slaughterhouse (days and hours) and their accessibility. Concerning examination and collection of lungs, and from the economical point of view, organs without any disease have been observed at the slaughterhouse. The affected lungs are first inspected locally and then sent in coolers to the regional veterinary laboratory.

The examination has been achieved macroscopically and microscopically. The macroscopic exam was a superficial observation of the organs, especially on the visceral and diaphragmatic faces and a deep observation at incision. In case of a parasitic bronchitis, a meticulous exploration of the trachea and the bronchi of the respiratory tract have been made in order to search the concerned parasites. The parasitic cysts have also been

identified. Previously found results on adult parasites were further identified and classified with a microscopically observation; some organ's fragments (pieces of pulmonary parenchyma of 1cm depth), were cut and then conserved into a 10% solution of formalin or in Bouin solution. These samples were after sent to the regional veterinarian laboratories in order to complete the histopathological study by using the Hematoxyline-Eosine method of coloration.

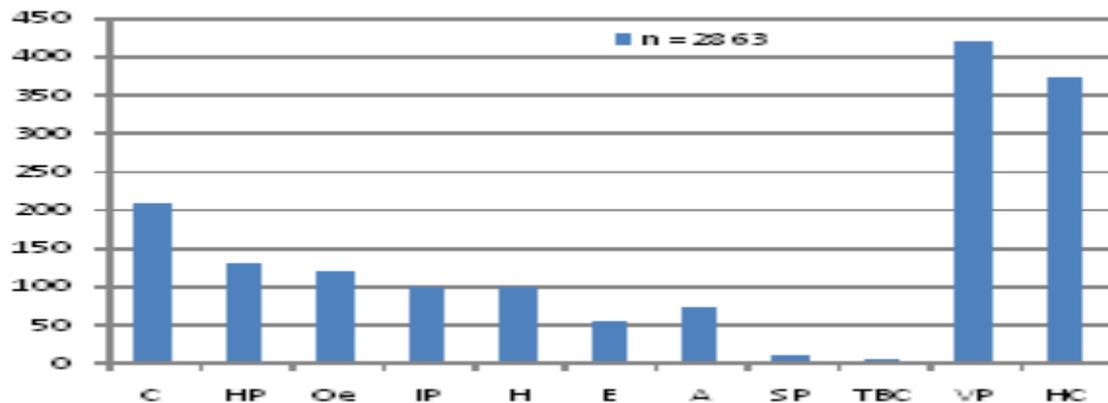
### RESULTS AND DISCUSSION

The survey has been led in Tiaret's slaughterhouse on 2863 ovine of different ages and sexes, in which 797 (27.84%) were autopsied.

**Table 1 : Number of ovine showing pulmonary lesions in autopsy**

Sex	Number of examined animals	Numbr of cases with pulmonary lesions	%
Males	1039 (36,29 %)	494 (17,25 %)	47,55
Females	1824 (63,71 %)	1313 (45,86 %)	71,98
Total autopsy	2863	1807	63,12

**Figure 1 : Prevalence of the pulmonary lesions in ovine.**



**Legends :** C congestion, HP hémorragic pneumonia, Oe œdema, IP interstitiel pneumonia, H hepatisation, E emphysema, A atelectasis, SP suppurative pneumonia, TBC tuberculosis, VP verminous pneumonia, HC hydatid cyste.

**Figure 2 : Number of cases with the seasons in ovine**

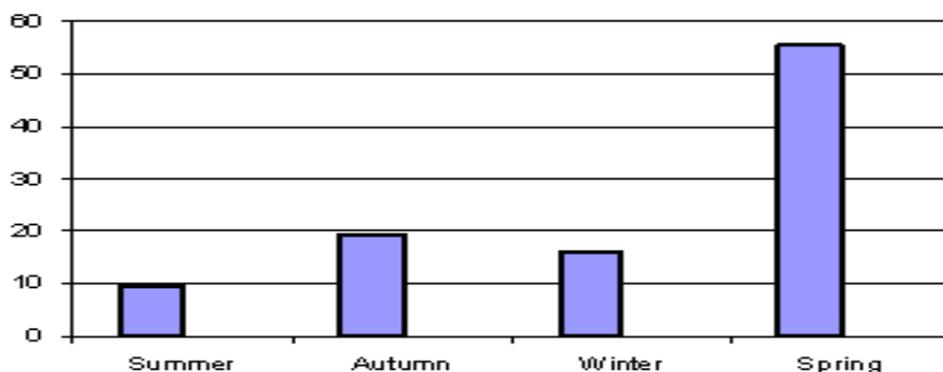
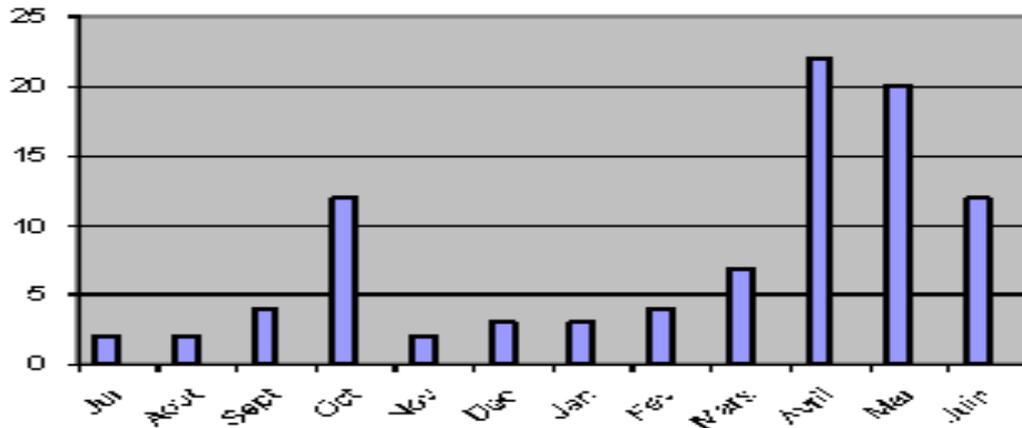


Figure 3 : Number of cases with different months in ovine



According to our results, pneumonia is considered to be one of the most important sheep diseases, which is distinctly similar to the one reported by Aimeur (3), El-Omar et al (15) and Mansar-Benhamza (25). Therefore, we have deduced that the pulmonary congestion represent the most frequent pulmonary pathology with a rate of 7.30%, this result proves to be superior to the one reported by Habacha (21) with a rate of 3.8% but present a certain likeness with the one reported by Al-Sultan (6) with a rate of 8%. This affection is initiated by an influx of blood in the lungs due to the obstruction of the pulmonary vessels. It is sometimes followed by pulmonary edema that, when the intravascular liquid spills in parenchyma and the alveoli (9). Most cases of congestion have especially been observed at the time of meteorisation in cold and rainy time that disrupts the thermal regulation of the animal is a favorable reason (26). It follows a too strong pressure of the rumen on the diaphragm what provokes a compression of pulmonary vessels and an increase in artério-capillary debit.

The other pulmonary changes observed at rates not least important than the others at the slaughterhouses. The interstitial pneumonia has been observed at a frequency of 3.46%. Our result is distinctly lower to the one reported by Habacha (21) with a rate of 50%. The lesions of interstitial pneumonias, when they are primitive, considering the conditions of apparition of the illness and the symptomatology are characteristic of viral pneumonias (20). According to Bryson (12), it seems that Para Influenza III virus (PI3) and the R.S.V (respiratory syncycial virus) are often at the origin of interstitial pneumonia. The hemorrhagic pneumonia has been observed at a rate of 4.54%. This result is similar those reported by Al-Sultan (6) with a rate of 5%. This lesion has especially been observed among the aged animals.

The pulmonary emphysema has been observed at a frequency of 1.92%. These results are lower to those reported by Habacha (21) with a rate of 5.07%. In bovine species, the emphysema can be a consequence of pulmonary strongylosis (27) or can be also due to infections by RSV (26). It presented as interlobular or intralobular shape (interstitial emphysema), observed especially among aged ruminants. This disease is often regularly associated to the dictyocaulose and accompanied by a suppurated form of bronchopneumonia (16) and some forms of viral pneumonias (13). This survey permitted us to distinguish the critical periods, favorable to the apparition of some lesions in relation to others.

The pulmonary edema has been observed at a frequency of 4.16%, this result is lower to the one reported by Al-Sultan (6) with a rate of 7% and can be also owed to the infection by the RSV (26).

Atelectasia and hepatization have been observed respectively at a rate of 2.55% and 3.42%. These results are distinctly lower to those observed by Boudilmi (10) with a rate of 16.2% for atelectasia and 39% for hepatization. In comparison with results found in the bovine species, our results are always distinctly lower to those reported by Gourlay (20), who reports a rate of 73% for atelectasia. These lesions are classically localized in the apical and cardiac lobes, and more rarely in the diaphragmatic one, seem to come with infections with mycoplasma and pasterella (2,8,9). The presence of exudates or parasites in bronchial lesions accompanying lung atelectasia, allows us to conclude to an infectious or parasitic reason.

The suppurated pneumonia has been observed at a respectively rate of 0.35%. The rate of suppurated form of pneumonia observed during our survey is distinctly lower to the one found by Habacha (21) with a rate of 30.7% and a rate of 15% by Al-Sultan (6). Abscess constitutes in general a consolidated infectious; the pus and the cockle of the abscess correspond to a reaction of the organism against a bacterial multiplication or a past infectious phenomena (11).

The tuberculosis has been observed at a rate of 0.14%, the obtained results are in accordance with those noted by Benateya (7) of 0.02% and by Brunet (11) with a rate of 0.33%. The tuberculosis is in upsurge and remains a troubling illness in our country in regard to the danger that represents tuberculosis for the public health and the economic losses caused by the seizure of carcasses in slaughterhouses; several authors were interested to this infection (14,18,22). Ali-lemoys (5) found a rate of 1.55% in Constantine area a rate of 0.92% in Skikda area; Benataya (7) at a rate of 0.20% in Constantine area and finally Khaldoun (24) at a rate of 0.21% in Oum El Bouaghi area. In Tiaret, during our study, we have recorded, only 3 cases of tuberculosis. Our result proves to be lower to the one reported by Al-Sultan (6) with a rate of 3%. The tuberculosis is more often observed among oldest females because it is of chronic nature and that the possibility of an exhibition to the infection increases with age (1).

Concerning parasitic pneumonia, the verminous pneumonia represent the most frequent pulmonary pathology with a rate of 14.63%. This frequency is more important than those reported by Al-Sultan (6) with a rate of 5%. The hydatid cyst has been observed at a frequency of 13.06%, taking the second place in frequency after the verminous pneumonia. This frequency is more important than those reported by Kamil (23) with a rate of 5.26% and 11.12%. In goat's species, Al Joboury (4) reported a frequency of only 5.88%. In comparison, Zanad (29) and Al-Sultan (6) reported a frequency of 25% and 28% respectively in bovine species respectively.

This disease is bound to the practice of grazing and the simultaneous presence of animals on the same prairies. Then, in youngest animals, the hydatidosis has less luck to persist, because of their early sacrifice, intervened to an age where the parasites can not reached their fertility stage; this what has been confirmed by Zahor (28) in bovine species.

This author has reported a rate of 80% of hydatidosis in culled cows, 58.94% in oldest ones, and 23.8% in youngest bovine (of less than two years old).

Our results on ovine respiratory tract lesions show clearly that the hydatidosis constitutes the most dominant pathology in our herds. Indeed, Ali-Lemouyes (5) reports an infestation rate of 16%. However, the hydatid cyst is the lesion which is observed around the year with an increase in frequency during autumn and winter seasons.

### CONCLUSION

The present survey achieved at the level of Tiaret slaughterhouse, constitutes a starting point toward a better knowledge of ruminants respiratory diseases in our country. It shows also that the slaughterhouse is the best location for screening and monitoring the evolution of lung damage, because slaughtered animals are belonging to the non controlled private sector animals. The obtained results show that the pulmonary lesions are present in a high frequency. The seasonal distribution of the different lesions was important. The oldest ruminants were the more infected.

### ACKNOWLEDGEMENTS

The authors are grateful for the support from ESPA Laboratory in , Institute of Veterinary and Agronomy Sciences, Batna University, Algeria . The authors would also like to think the Veterinary department in Tiaret University, Algeria.

### REFERENCES

- [1] ACHA, P.N.; SZYSRES, B. L'hydatidose. In: Zoonosises and illnesses transferable townships to the man and to the animals. International Office Edition of the WHO épizooties 2' edition, 794-815, 1989a.
- [2] AHMAD, I.R. Infectious mycoplasma pneumonia in bovine. Bovine and ovine magazine, 40' year- Nbre 12. March- April. pp. 14 -15, 1998.
- [3] AIMEUR, R. Prévalence des pathologies respiratoires chez les ruminants «Anatomie pathologique et étiologies». Thèse de Magister en sciences vétérinaires, option : Biologie animale. Université de Constantine, 1999.
- [4] AL-JOBOURY, K.H.; AL-DARRAJI A.M. A Study on caprine pneumonia in Iraq local. Goats. Etiological findings. The Iraq. J. et. Med. 13 : 170–179, 1989.
- [5] ALI-LEMOUYS, M. Survey of the frequency of the parasitic and infectious illnesses to the slaughterhouse of Constantine. Memory of Veterinary Doctor. University of Constantine, 50pp, 1978.
- [6] AL-SULTAN, I.; AI-MELIGY, A.A.; YOUKHANA, S.O.; MAHRAN, O.M. Histopathological studies of the pulmonary affections of cattle in Mosul- Area-Iraq. Department of pathology, college of Vet. Med. Mosul University , Iraq , Zagazig. Vet. J. 15(2) : 89–108, 1987.
- [7] BENATEYA, S. The inspection of meats of butcher shop to the slaughterhouse of Constantine in order to know the transferable illnesses to the man. Memory of Veterinary Doctor. University of Constantine, 50pp, 1980.

- [8] BENMAHDI, T. Observation of the pulmonary response of conventional calves of infections with *Pasteurella haemolytica* A1. Department of Vet. Path., the royal Vet. College, Univ. of London.
- [9] BLOOD, D.C.; HENDERSON, J.A. Medicine veterinarian "illnesses of the respiratory device Vigot Frères Publishers, 2<sup>e</sup> Edition, Paris 6", : pp 186–208, 1976.
- [10] BOUDILMI, B. Contribution to the survey of the chronic pneumopathies among the lamb "anatomopathological and bacteriological Survey " Veterinary National School of Lyon, 1984.
- [11] BRUNET, I. Autopsies and lesions of the sheep and the goat. Edition of the Veterinary point, l' Edition, 25 Rue Bourgelat, 94 700 House Alforts. July, 1991.
- [12] BRYSON, D.G. Calf pneumonia. In: Symposium on Bovine Respiratory Diseases. Veterinary Clinics of North America: Food Animal Practice 1: pp. 237-257, 1985.
- [13] CABANIE, P.; SCHELCHER, F. Practical Diagnosis of the pulmonary lesions of the bovines. In: Respiratory unrests of the bovines. Company French of Buiatrie, Paris, 29-240, 1997.
- [14] CADOZ, M.O. Contribution à l'étude des broncho-pneumonies du chamois, Chapitre : Connaissance sur les pathologies pulmonaires infectieuses dans la faune sauvage. Thèse Doct. Vet. N°81, E.N.V. de Lyon.18-53, 2000.
- [15] EL-OMAR, A.; EL-CHARABAI, T.A.; KHALED, A.; HAMADA, T.B.A. The Arab Center for the Arid Environments, 2 (2), 52-60, 2009.
- [16] ESPINASSE, J.; SAVEY, M.; VISO, M. The chronic pneumopathies at the bovins. Rec. Med. Clothes, 161 (12), 1167-1171, 1985.
- [17] FRANCOZ, D. Etude des facteurs de risque associés aux infections respiratoires chez les bovins laitiers au Quebec, 30<sup>ème</sup> Symposium sur les Bovins Laitiers au Quebec, Canada, pp 1-18, 2006.
- [18] GORTAZAR, C.; VICENTE, J.; GAVIER-WIDEN, D. Pathology of bovine tuberculosis in the European wild boar (*Sus scrofa*). Veterinary record 152: 779-780, 2003.
- [19] GOURLAY, R.N.; MACKENZIE, A.; COOPER, J.E. Studies of microbiology and pathology of pneumonic lungs of calves. Institute for research on animal disease, agricultural research council, Compton, Berkshire. J. Comp. Path. 80 : 575–584, 1970.
- [20] GREPINET, A.H.A. The problem of the veal pneumonias enzootics. Veterinary National School of ALFORT, thesis for the Veterinary Doctorate N°03, 1971.
- [21] HABACHA, F.G.; AL-DARRADJI, A.M.; AL-ZOUBAIDI, E. Study of pathological changes in cattle lungs in Iraq . Department of med, Path. College of Vet. Med. University of Baghdad, 1993.
- [22] HARS, J.; BOSCHIROLI, M.L.; BELLI, P.; VARDON, J. Découverte du premier foyer de tuberculose sur les ongulés sauvages en France. Revue ONCFS Faune sauvage 261:29-34, 2004.
- [23] KAMIL, S.A.; Pariah, N.S. Pathology of parasitic pneumonia in sheep. Indian J. of Anim. Sci. 60 (2) : 1316 -1318. November, 1990.
- [24] KHALDOUN, A. Approach to the bovine tuberculosis in the region of Ain-Beida. Veterinary Doctor Thesis, Constantine University, 1985.
- [25] MANSAR-BENHAMZA, L. Les lésions pulmonaires chez les bovins. Communication orale du Journées Inter. Med. Vét., 2009. Université d'El-Tarf, 2009.
- [26] VALLET, A.; FOSTIER, M. Bovine illnesses " the respiratory infectious illnesses." Chapter in Manual Pratic [agricultural, France Edition, 2<sup>nd</sup> Edition, Paris, pp 13–26, 1994.



- [27] VILLEMIN, M. Medicine and surgery of the bovines "the respiratory device." Edition Vigot Frères, 1st Edition, Paris 6': pp 515–537, 1974.
- [28] ZAHOR, Z. Present frequency of the animal hydatidosis in the region of Algiers. Day of survey of the society: Hydatidology. Algiers, 1983.
- [29] ZANAD, K.H. Pathological studies of some aspects of pneumonia in local goats. A thesis submitted to the collage of vet. Med University of Baghdad- Iraq, 1984.