

Animal Health Research Institute,
Mansoura Provincial Lab.

MYCOLOGICAL STUDIES ON COW PNEUMONIA AT MANSOURA GOVERNORATE (With 3 Tables)

By

DOAA A. HUSSEIN

(Received at 25/7/2004)

دراسات فطرية على الالتهاب الرئوي في الأبقار في محافظة الدقهلية

دعاء أحمد حسين المطري

أجريت هذه الدراسة على ١٥٠ عينة من الرئة لأبقار مصابة بالتهاب رئوي في محافظة الدقهلية وتم زراعة جميع العينات على الأوساط الفطرية المختلفة وكان هناك ٤٢ عينة من الرئة المصابة أعطت نتيجة إيجابية بالنسبة للفحص الفطري وقد تم عزل ١٥ عترة من عترات الأسبرجلس (٢٢,٥%) و ١٠ عترات من الكانديدا البيكانس (٦,٧%) و ٢ عترة من الكريبتوكوكس نيوفورمانس (١,٣%) وعترة واحدة من الأزيديا كورمبيفيرا (٠,٦%) وكان هناك ١٠٨ عينة من الرئة المصابة أعطت نتيجة سلبية بالنسبة للفحص الفطري.

SUMMARY

150 lung samples from cows slaughtered at Mansoura abattoir were collected. All samples were inoculated onto Sabouraud dextrose agar for isolation of fungi. Results obtained showed that 42 out of 150 examined infected lungs gave positive results for mycological examination with an incidence (28%) while the remaining 108 cases (72%) were found to be negative for mycological examination. Mycological examination of 150 infected lungs revealed isolation of *Aspergillus* species (22.5%), *Candida albicans* (6.7%), *Cryptococcus neoformans* (1.3%) and *Absidia corymbifera* (0.6%).

Key Words: *Pneumonia, fungi, Aspergillus, cow.*

INTRODUCTION

Respiratory disorder specially pneumonia represent one of the most causes of morbidity and mortality in cows that lead to disturbance

in clinical sings and sever economic losses. Mycotic pneumonia in some cases is very dangerous due to lack of quick laboratory diagnosis and usually mycotic pneumonia is produced as the result of mixed infection with bacteria and viruses. Also other causes are non infections as malnutrition, heredity, poor hygienic measures and climatic disorders that play a role as predisposing factors (Rahman and Lyer 1979, Hafez *et al.* 1991 and Elyas, 1993).

Aspergillus species are the most common factor of mycotic pneumonia (Rehbinder, 1977, Chihaya *et al.* 1991, Maity and Deb 1993, Pal *et al.* 1995, Dadhich and Sharma 1996, Pusterla *et al.* 1996 and Hafez 2002).

Cryptococcus neoformans also is one cause of predominantly server pulmonary diseases (Baro *et al.* 1998, Baro *et al.* 1999 Gutierrez *et al.* 1999 and Torres *et al.* 2003). Zygomycosis were previously recorded (Carter and Chengappa 1991, Kamil and Parihar 1991 and Hafez 2003), as well as *Candida albicans* is a cause of mycotic pneumonia (Sebryakov *et al.* 1984 and Mahendra *et al.* 1998). In case of Aspergillosis the gross lesions of lung were consolidation with large number of small yellowish nodules or grey hepatization with pin head size small granules (Maity and Deb 1993, Chihaya 1999, and Hafez 2002).

The aim of this investigation was to detect the main mycological causes of cow pneumonia in Mansoura governorate.

MATERIALS and METHODS

Samples:

One hundred and fifty lung samples showed the gross lesions of pneumonia were collected from 150 cows which slaughtered at Mansoura abattoir.

Isolation and identification of fungi

The lung samples were immersed in 70% ethyl alcohol for 3 minutes to remove the external contamination and then the samples were opened and the contents were inoculated onto Sabouraud dextrose agar media containing chloramphenicol 0.05mg/ml, the inoculated plates were incubated at 25°C and 37°C for 5-6 days. All isolates were identified as Wylli and Morehouse (1978) and Balow and Hausler (1981).

The yeast isolates were identified as shown by Refai *et al.* (1969) and All Doory (1980).

RESULTS

The main clinical signs of affected cows were recurrent fever, reduced general condition, a rectal temperature of 40°C, increased respiratory rate, coughing and serous discharge. The cows were slaughtered in spite of intensive therapy. The most important isolates are shown in tables (1), (2) and (3).

Table 1: Prevalence rate of positive cases of fungi isolated from pulmonary lesions

Total number of examined cases	No. of positive for yeast		No. of positive for mould		Total	
	No	%	No	%	No	%
150	12	8 %	16	10.7%	28	18.7%

Table 2: Incidence of yeast isolated from pulmonary lesions:

Yeast	No	%
<i>Candida albicans</i>	10	6.7 %
<i>Cryptococcus neoformans</i>	2	1.3 %

Table 3: Incidence of moulds isolated from pulmonary lesions:

Mould	No	%
- <i>Aspergillus</i> species	15	10 %
<i>A. fumigatus</i>	9	6 %
<i>A. flavus</i>	4	2.7 %
<i>A. niger</i>	2	1.3 %
- <i>Absidia corymbifera</i>	1	0.6 %
Total	16	10.6 %

DISCUSSION

Mycotic pneumonia in some cases is very dangerous due to lack of quick laboratory diagnosis and usually pneumonia is produced as the result of mixed infection with bacteria. In this investigation *Aspergillus* species were isolated from 15 cases of infected lungs of pneumonic cows (*A. fumigatus* 6%, *A. flavus* 2.7%, *A. niger* 1.3%). These results are quite similar to those obtained by Kamil and Parihar (1991) and Sayed (1996). The gross lesions of lung were multiple nodules measuring up to 4mm the same results mentioned by Pusterla *et al.* (1996). *Candida albicans* was isolated from 10% of affected lung

samples the present results coincide with that of Mahendra *et al.* (1998). While *Cryptococcus neoformans* was isolated from 1.3% of cases. These results are somewhat in close agreement with the results obtained by Baro *et al.* (1998) and Torres *et al.* (2003). *Absidia corymbifera* was isolated from 0.6% of infected lungs. Jensen *et al.* (1990) and Hafez (2002) noticed similar results.

REFERENCES

- Al Doory, Y. (1980):* Laboratory Medical Mycology. Lea Febuiger Philadelphia Kimpten Publisher London.
- Balow, S.A. and Hausler, W.J. (1981):* Diagnostic procedures for bacterial, mycotic and parasitic infections. 6 th ed. pp. 1043-4092.
- Baro, T.; Torres-Rodriguez, JM.; Morera, Y. and Mendez, R. (1999):* Serotyping of *Cryptococcus neoformans* isolated from clinical and environmental sources in Spain . J. Cli .Microbiol . 37 (4) 1170-2.
- Baro, T.; Torres – Rodriguez, JM.; De Mendoza, MH. and Alia, C. (1998):* First identification of autochthonous *Cryptococcus neoformans* Var. *gattii* isolated from goats with predominantly sever pulmonary disease Spain. J. Clin. Microbiol. 36 (2) 458 - 61.
- Carter, G.R. and Chengappa, M.M. (1991):* Essentials of Veterinary Bacteriology and Mycology Fourth Edition. Lea and Febiger, Philadelphia, London pp. 266-268.
- Chihaya, Y.; Furusawa, Y.; Okada, H. and Matsuz, Y. (1991):* Pathological studies on systemic mycoses in calves J. Vet. Med Sci. 53 (6): 1051-1058.
- Dadhich, H. and Sharma, G.D. (1996):* Incidence and pathology of mycotic pneumonia in goats of Rajasthan . Indian – Veterinary . J. 73 : 6 , 679 – 680 .
- Elyas, A.H. (1993):* Some studies on sheep pneumonia of bacterial and fungal origin. Assiut. Vet. Med. J., 29 (58): 89-95.
- Gutierrez, M.; Garcia, and Marin, J.F. (1999):* *Cryptococcus neoformans* and *Mycobacterium bovis* causing granulomatous pneumonia in a goat. Vet. Pathol. 36 (5): 445-448.
- Hafez, A.M. (2002):* Bacteriological and mycological studies on lung infection in newly bron calves. J. Egypt. Vet. Med. Assoc. 62 (4): 2002.

- Hafez, A.M. ; Razig, R.A.; El-Amrousi, S. and Al-Handi, A.B. (1991):* Respiratory diseases occurring in farm animals in the eastern province of Saudi Arabia. *Assiut Vet. Med. J.*, 24: 48-88.
- Jensen, H.E.; Schonheyder, H. and Jorgensen, J.B. (1990):* Intestinal and pulmonary mycotic lymphadenitis in cattle *J. Comp. Pathol.* 102 (3): 345 - 355.
- Kamil, S.A. and Parihar, N.S. (1991):* Pathology of mycotic pneumonia in sheep. *Ind. J. Anim. Dci.*, 61 (1): 13-16.
- Mahendra Pal, Lee – Chanqwood,, Pal- M. and Lee Cw. (1998):* Spontaneous pneumonia in a goat due to *Candida albicans*. *Korean J. of Vet. Clinical. Medicine* 16 (2) 467-468.
- Maity, B. and Deb, P. (1993):* Incidence and histopathology of bovine pneumonia due to fungal infection *Ind. J. Anim. Helth.*, 32 (2): 109-112.
- Pal, M.; Sejra, S.; Sejra, AR. and Lee-Cw. (1995):* Caprine pneumonia caused by *Aspergillus flavus*. *Korean. J. of Vet. Clin. Med.* 12 (2): 203-206.
- Pusterla, N.; Ossent, P. and Beaun, U. (1996):* A case of acute disseminated pneumomycosis in a cow. *Schweiz Arch Tierhelikd* 138 (4): 189-94.
- Rahman, T. and Lyer, P.K.R. (1979):* Studies on pathology of ovine pneumonia. *Ind. Vet. J.*, 56 (6): 455-461.
- Refai, M.; Gobba, A.H. and Reith, H. (1969):* Monograph on yeasts Diagnosis, diseases and treatment. *Egypt. Vet. Med. J.*, 18: 255.
- Rehbinder, C. (1977):* Mycotic granulomatous pneumonia in Lamb. *Nord Vet. Med.* 29 (7-8) 343-6.
- Sayed, A.M. (1996):* Some bacteriological and mycological studies on sheep pneumonia at Assiut governorate. *Assiut. Vet. Med. J.* 36 (71) 68-72.
- Sebryakov, E.V.; Parakin, V.K. and Voronyanskii, V.P. (1984):* *Candida* mycosis in cattle and swine. *Veterinary Moscow*, 3: 43-46.
- Torres-Rodriguez, JM.; Morera, Y.; Baro, T. and Castaneda, E. (2003):* Pathogenicity of *Cryptococcus neoformans* Var. *gattii* in an immunocompetent mouse model. *Med. Mycol.*, 41: (1): 59-63.
- Wylli, T.D. and Morehouse, L.G. (1978):* Mycotoxic fungi, mycotoxins and mycotoxicosis. Vol. 2. (Mycotoxicosis of domestic and laboratory animals, poultry and aquatic invertebrates and vertebrates) Marcell, Dekker Inc., New York, pp. 570.