

Aerobic Bacteria and Mycoplasma Isolated from Chicken Exhibiting Clinical Symptoms of Infectious Coryza

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ملخص البحث

الزكام الحمجي مرض تنفسي حاد يصيب الجزء الأعلى من الجهاز التنفسي للدجاج في أعمار مختلفة مسبباً خسائر اقتصادية كبيرة. أجريت هذه الدراسة لمعرفة المظوره والبكتيريا الهوائية المصاحبة للمرض وبفحص عدد 106 حالة مصابة بالمرض تم عزل 382 معزولة بكتيرية منها 188 سالبة و194 موجبة لصبغة جرام بالإضافة إلى 26 معزولة (isolate) من المظوره حيث يظهر المرض دائماً في صورة عدوي مختلطة (Mixed infection)

Summary

The aerobic bacteria and mycoplasmas isolated from chicken with signs of acute coryza were identified. One hundred and six diseased birds with typical clinical symptoms of infectious coryza (IC) were examined, 382 bacterial isolates were obtained. These consisted of 194 Gram-positive and 188Gram-negative bacteria. Twenty-six mycoplasma isolates were also isolated.

Introduction

Infectious coryza (IC) is an upper respiratory tract disease of chicken characterized by anorexia, nasal discharge, sneezing, lacrimation, facial swelling and conjunctivitis. The causative agent of the disease is *Haemophilus paragallinarum* (De Bleick, 1932; Page, 1962; Blackall and Reid, 1982; Yamamoto, 1991). In previous, studies, Nelson (1936), Linizitto *et al.* (1988) and Uchida *et al.* (1990) isolated different bacterial species together with *H. paragallinarum*. However, bacteria other than *H. paragallinarum* were also isolated from cases with typical signs of IC (Mouhaid *et al.*, 1992; Horner *et al.*, 1992; Blackall, 1999). In Sudan, Khogali (1970) and Shigidi (1971) described the disease and isolated *H. gallinarium* from birds with respiratory infection.

The aim of this work was to isolate and identify the aerobic bacteria and mycoplasmas associated with cases showing typical signs of IC.

Materials and Methods

Birds:

One hundred and six diseased chickens of different breeds ranging from 1-20-months-old were submitted to the Central Veterinary Research Laboratories for diagnosis. They were either from Khartoum or Central State. All birds examined showed clinical signs similar to those of IC, which included anorexia, lacrimation, nasal discharge, conjunctivitis, facial swelling and closed eyes.

Specimens:

Swabs were taken aseptically from tracheae of live birds and from infraorbital sinus and conjunctival sacs after slaughtering. Killed birds were subjected to post mortem examination to record the lesions.

Isolation of bacteria:

The swabs were streaked separately onto chocolate agar, blood agar, blood agar plus V factor (NAD), Columbia blood agar and MacConkey agar (Oxoid) for isolation of bacteria. Inoculated plates were incubated aerobically and under 10% carbon dioxide tension in a candle jar at 37°C for 24-48 hours. Purified isolates were identified according to Cowan (1974).

Isolation of mycoplasma:

Swabs aseptically taken from the mouth cavities, tracheae and infraorbital sinuses were cultured onto Chancock media. Inoculated plates were placed in a humid plastic container. All cultures were incubated at 37°C and examined daily for growth of *Mycoplasma*, up to 7 days. The purified isolates were identified according to Bradbury (1996).

Purification of isolates:

Cultures were purified by subculturing a part of an isolated typical colony onto the corresponding medium. The process was repeated three times.

Results

Post mortem examination:

In most cases, the infraorbital sinuses contained sticky fluid. White caseated plugs which had usually led to complete closure of one eye, were found inside the conjunctival sac. Pneumonic lesions were noticed in few cases.

Bacterial isolation:

Several species of gram positive and gram negative bacteria were isolated from trachea, conjunctival sacs and infraorbital sinuses. *Staphylococcus epidermidis* was the dominant bacteria isolated from infraorbital sinuses, trachea and conjunctival sacs collectively. On the other hand, *E. coli* showed higher rate of isolation from infraorbital sinus and *Pseudomonas aeruginosa* from trachea. Gram-negative bacteria were not isolated from conjunctival sacs (Figs. 1 and 2).

Mycoplasma isolation:

Four species of *Mycoplasma* and one species of *Acholeplasma* were isolated from trachea, infraorbital sinus and mouth cavity as shown in Fig.3.

Discussion

This work was carried out to identify the aerobic bacteria and *Mycoplasma* associated with IC. The clinical signs and lesions in examined birds were similar to those of IC (Yamamoto, 1991; Hofstad *et al.*, 1984). Bacteria were isolated from the three different sites. The highest recovery rate was obtained from the infraorbital sinus (100%) while 85.8% of both the tracheal and the conjunctival sac swab cultures were positive.

The isolation of *S. epidermidis*, *S. aureus*, *Actinomyces pyogenes* and *Pseudomonas aeruginosa* from the trachea and the sinus of diseased birds was previously reported by Linizitto *et al.* (1988). The isolation of *E. coli* from the infraorbital sinus and trachea was in agreement with the findings of McMartin (1962), Khogali (1970) and Linzitto *et al.* (1988). Signs of illness and lesions were always severe in cases of *E. coli* involvement. This organism causes panophthalmitis in poultry as a primary aetiology. Similar results were also reported by Seetha (1988).

Mycoplasma gallinarum is considered by many workers to be pathogenic when associated with other organisms. In this work the isolation of *M. gallinarum* together with other bacteria from chickens showing signs of coryza is in agreement with Adler and Yamamoto (1956), McMartin (1962) and Harbi *et al.* (1982). *M. gallinaceum*, *M. iners*, *M. anatis* and *Acholeplasma laidlawii* were

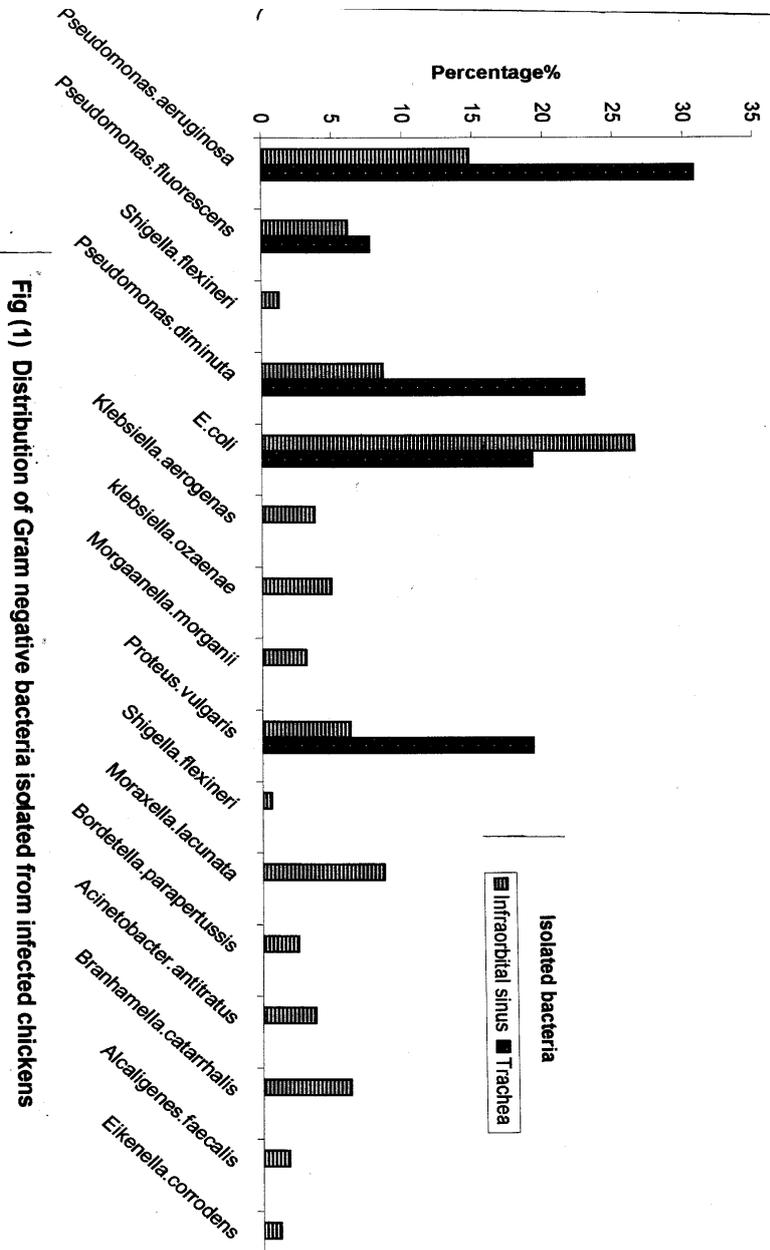


Fig (1) Distribution of Gram negative bacteria isolated from infected chickens

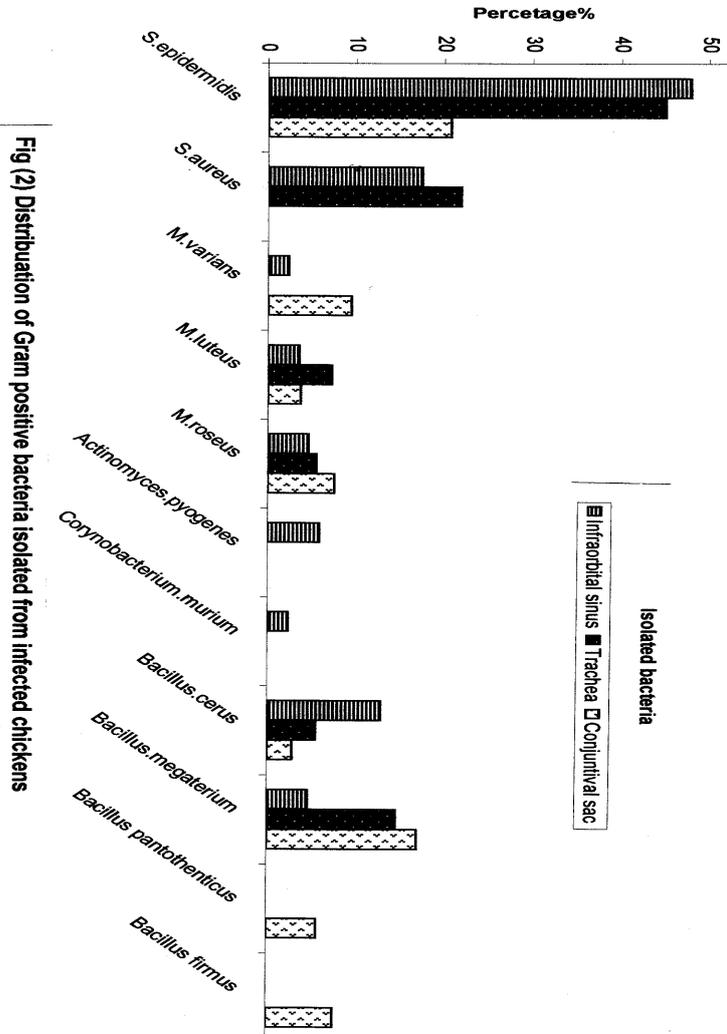


Fig (2) Distribution of Gram positive bacteria isolated from infected chickens

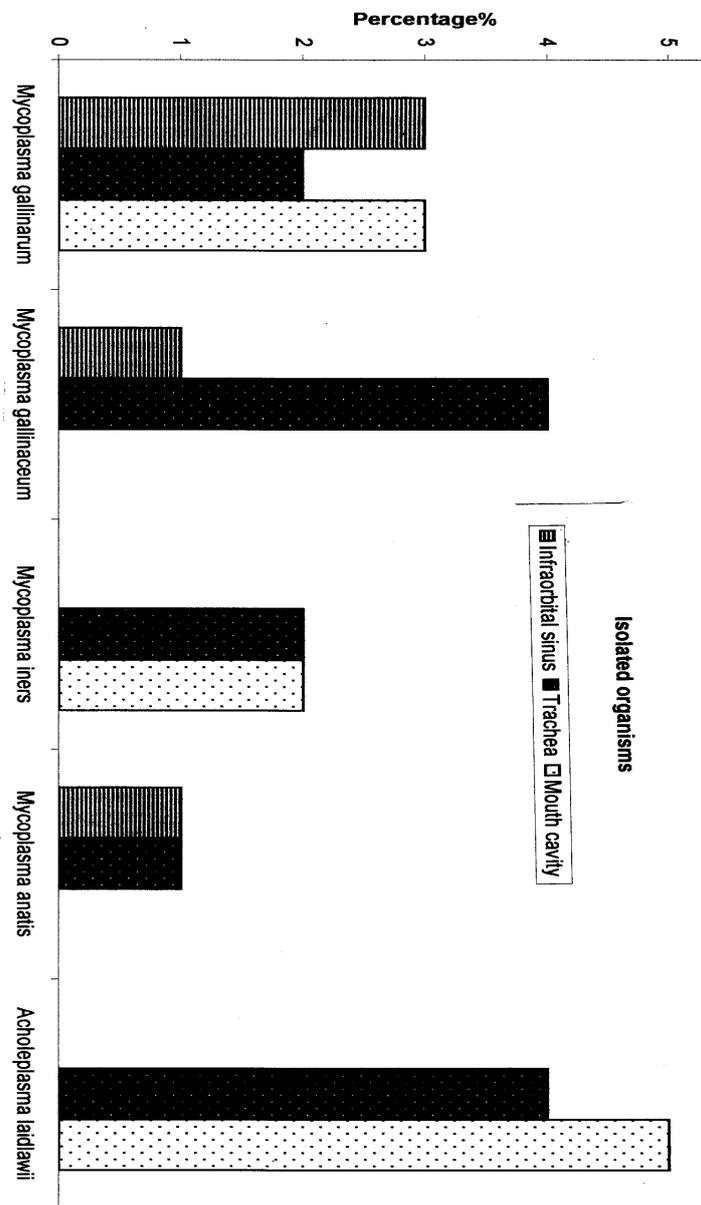


Fig (3) Distribution of Mycoplasma and Acholeplasma isolated from infected chickens

considered to be normal inhabitants of trachea and mouth cavity (MacMartin, 1962).

This study did not confirm the isolation of *H. paragallinarum*, the causative agent of IC, probably due to the complicated nature of the disease which usually runs a course of a mixed infection with some bacterial and viral pathogens, besides the delicate and fragile nature of the organism (Giuro, 1984). Moreover, the use of antibiotics by poultry breeders might have decreased the possibility of isolating the organism which is sensitive to a wide range of antibiotics (Zaini *et al.*, 1991).

Recently, *H. paragallinarum* was isolated from sites such as liver, kidney, tarsal joints and ocular globes by Sandoval *et al.* (1994). Isolation from these sites was not attempted during the present study.

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