

Arthritis Caused by Staphylococci in Avian Youth

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Abstract. During 2010, from a poultry farm in Transylvania, 12 articulation samples were received from youth avian chicken egg farm where the disease has progressed sporadically at 2 different series in the form of arthritis, initially unilateral and later bilateral.

Classical bacteriological techniques made towards mycoplasmosis was negative while from all the samples were isolated strains of *Staphylococcus spp.* Isolates from both first and the second episode of disease were framed after examination properties using the API Staph biochemical galleries in the species *Staphylococcus intermedius*.

Following testing the strains susceptibility to antibiotics (diffusimetrical technique) was found that they are sensitive to: Penicillin, Amoxicillin, Ampicillin, Enroxil, Floron, Thiamphenicol, Linco-Spectin, Pristinamycine, Tetracycline, Oxacillin, Ceftiofur and resistant to Methicillin.

Key words: avian staphylococcus, Methicillin-resistant strains, fibrinous arthritis.

INTRODUCTION

Avian staphylococci is an opportunistic infection that occurs mainly in the locomotor system. She is responsible for degradation of performance breeding, slaughter confiscation and food poisoning (10).

The disease is usually caused by *Staphylococcus aureus*, microorganism present all over (1,2,3,4,7). All species of mammals and birds are susceptible to staphylococci infections, that can be transmitted to humans (5). Staphylococci are very resistant and persist long time in solid mediums and exudates. Some strains are also resistant to common disinfectants, heat and sodium chloride.

Germ reservoir is huge, mainly by healthy carriers containing germs in their nasal cavities, mouth), and ill individuals. Transmission is most often from indirect articular trauma, skin or through faecal contamination of eggs.

MATERIAL AND METHODS

Were examined 12 articular samples from avian youth from a breeding farm of hens in Transylvania. From epidemiological data results that from a total of 21000 chickens, 30-40 presented lesions of arthritis, mostly females. Initially disease started by affecting the articulation of one member, that later extended to the other too. This arthritis is maintained in the farm from a serie to another, even if after every serie is applied mechanical cleaning and disinfection with Ecocid concentration 1%.

Bacteriological examination was performed by sowing articular fluid extracted by puncture after sterilization by flaming the site of puncture, on special media for *Mycoplasma spp.* and the usual media (broth and agar), egg yolk agar and blood agar for the other aerobic species. Incubation was carried out both aerobically and in anaerobic conditions. The germs isolated were identified by the examination of morphological, cultural characters and biochemical properties using API Staph galleries. Haemolytic activity was assessed on agar with 5% sheep blood and antibiotics sensitivity by antibiograma (by diffusimetrical technique) performed on Mueller-Hinton medium.

RESULTS

Examining the avian youth was observed difficult locomotion and a mild discomfort and swelling of the affected articulation, while at necropsy the presence of a fibrinous exudate (Fig. 1).



Fig. 1. Fibrinous arthritis in chicken

Sowings made from articular containing in 12 samples on broth agar and blood agar led to the isolation of *Staphylococcus spp.* pure culture in all samples on all media used in both hatching systems. Identification of the bacterial genus was made by examining morphological and cultural characters and hemolytic activity on blood agar (Fig. 2).

On agar containing 5% sheep blood all strains of *Staphylococcus spp.* isolated from chicken suffering from arthritis presented type hemolytic activity. Detection of the specie was performed using the API Staph galleries, the strains isolated were part of the species *Staphylococcus intermedius* (Fig. 3).

Following testing the strains susceptibility to antibiotics (diffusimetrical technique) on Mueller-Hinton agar revealed that *Staphylococcus intermedius* strains isolated from the two episodes of arthritis are sensitive to: Penicillin, Amoxicillin, Ampicillin, Enroxil, Floron, Thiamphenicol, Linco-Spectin, Pristinamycine, Tetracycline, Oxacillin, Ceftiofur and resistant to Methicillin.

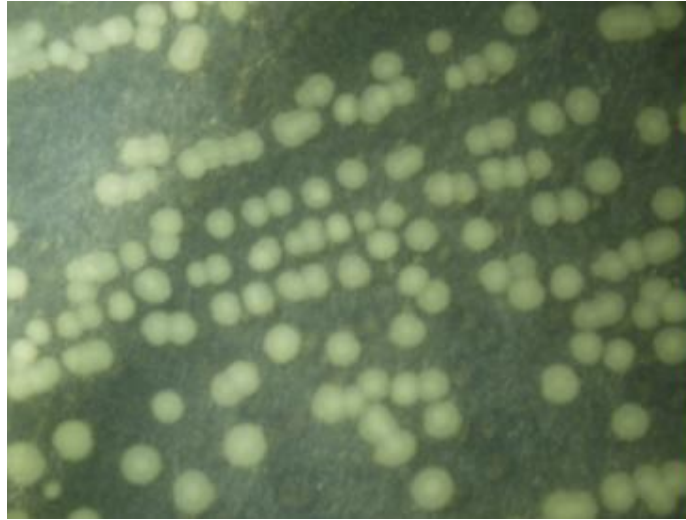


Fig. 2. Morphological characters on yolk agar of the *Staphylococcus spp.* strain isolated from avian suffering from arthritis



Fig. 3. Biochemical properties on API Staph gallery.

DISCUSSIONS

The presence of these arthritis in young avian occur sporadically, not that important regarding economic losses but especially by creating the reservoir of germs that he can not remove by usual means of disinfection.

Etiological diagnosis for this outbreak has not raised special problems, the etiologic agent is developing after the first sowing in pure culture. But to consider that arthritis in birds may be caused by other organisms, diseases to which differential diagnosis should be made. Some of the etiologic agents of these diseases require special or additional medium for isolation (glucose, blood serum) (8,9).

The exam of biochemical properties using API Staph galleries in isolates from two episodes of arthritis, which have evolved in different serials of chickens, and the study of their sensitivity to a total of 12 antibiotics showed a perfect identity between strains. *S. intermedius* strains isolated from avian youth suffering from arthritis are sensitive to Penicillin, Amino penicillin, Fluoroquinolone, Florfenicol, Thiamphenicol and Tetracycline. We note, however, by this work, the presence in the microflora of poultries of Methicillin-resistant *Staphylococcus aureus* strains that may represent a risk to humans (6, 11).

CONCLUSIONS

- From the staphylococcal outbreak in young avians, a strain of *Staphylococcus intermedius* was isolated.
- Based on biochemical properties and antibiograma is established that the ethiology of the arthritis involves a single strain of *Staphylococcus intermedius*, which manages to remain in shelters from a serial to another.
- Although the isolated strain is sensitive to common antibiotics, however, is resistant to Methicillin which may represent a risk for humans.
- Din focarul de stafilococie la tineretul aviar de înlocuire s-a izolat o tulpină de *Staphylococcus intermedius*.

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