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Short Communication

EXPERIMENTAL STUDY OF MYCOPLASMAL ARTHRITIS IN SHEEP AND GOAT

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SUMMARY

The mycoplasmas are common etiological agents for joints inflammation. In sheep and goats *M. mycoides* subsp. *mycoides* LC type and *M. capricolum* were isolated from clinical cases of polyarthritis. Pneumoarthritis was produced in lambs and kids, inoculated intratracheally (i/t) with *M. mycoides* subsp. *mycoide*s LC type. Information regarding involvement of mycoplasma in natural cases of arthritis in goats is not available in the country. The study describes isolation and characterization of these mollicutes from the joints of kids along with the experimental transmission of infection.

Key words: *Mycoplasma*, arthritis, sheep, goat, *M. mycoides, M. capricolum*

Synovial fluid was aseptically collected from carpal and tarsal joints, nasal, vaginal and conjunctival swabs from two kids (P110 and P113) having the clinical arthritis. Four kids and two lambs were used for transmission studies. Blood agar medium was used for screening the different bacterial species while liquid and solid mycoplasma media (Freundt *et al.,* 1976) were used for the isolation of mycoplasma. The samples after inoculating in mycoplasmal liquid and solid medium were incubated at 37ºC for 3-5 days and the samples not showing any growth were given 5 subsequent passages before being considered negative. Individual single colony of "fried egg" morphology was picked up and emulsified in the liquid medium. Blood agar plates were streaked with the emulsified colony to rule out the possibility of growth of L-form. The isolates were further cloned through successive alternate passage on solid and liquid media and identified according to Freundt *et al*. (1979). For serological identification, growth inhibition (Brogden *et al*., 1988), immunodiffusion (Lemcke, 1965), immunofluoresence (Al-Aubaidi and Fabricant, 1971) and immunoperoxidase tests (Polak-Vogelzang *et al.* ,1978) were used . Experimental inoculation was done in 4 healthy kids and 2 lambs with 0.5ml broth culture having containing 1 x 10^6 CFU/ml.

The carpal and tarsal joints of the affected kid (P110) were swollen and painful. The *Mycoplasma mycoides subsp. mycoides* (Mmm) LC type colonies were isolated from the synovial fluid of affected joints. No isolation was made from nasal and vaginal samples. The digitonin sensitive isolates did not form film and spots and also not metabolize arginine. The identification of all these isolates as Mmm LC type was based on growth inhibition, direct and indirect immunofluoresence, immunoelectrophoresis and indirect immunoperoxidase tests. The kid (P113) died after 4 days of onset of symptoms like rise of temperature 106-107^{0}F, extensive nasal discharge, respiratory distress, swelling of joints, lameness etc. On autopsy Mmm LC type was isolated from nasal mucous, synovial fluid and pneumonic lungs. Macroscopically, the right apical lobe of lung was congested and consolidated in patches showing pneumonic lesions. The synovial fluid was turbid and yielded Mmm LC type organisms on culture. The experimentally inoculated kids and lambs had died in 10 days with similar morbidity as described by Basanti *et al.* (1992).

The isolation of Mmm LC from cases of fatal polyarthritis and septicemia of kids has been reported by several workers (Sanguinetti *et al.,* 1982, Nascimento *et al*.,1986). The present study showed

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that although one of the naturally infected and arthritic kid (P110) harboured Mmm LC in the synovial fluid while pneumonic lesions were absent. However, the other kid (P113) revealed involvement of pulmonary tissues with pneumonic lesions and isolated the Mmm LC from its nasal mucosa and pneumonic lesions. This infection commonly extended into tendon sheaths, bursae, and joint capsules and was characterized by fibrinonecrotizing tenosynovitis. Adjacent soft tissues, including skeletal muscles, were often involved as well. Mycoplasma as a group were the most common etiological agent of naturally occurring chronic joint inflammation of man and animals.

Mmm LC type was isolated from the synovial fluid of clinical cases of arthritis in kids maintained on an organized Barbari flock. When given intra-tracheally to experimental kids and lambs this isolate caused lameness, acute swelling on the joints of all four legs and fever eventually resulting in the death of all kids within 4-10 days.

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REFERENCES

Al-Aubaidi, J.M. and Fabricant, J. (1971). The practical application of immunofluoresence (agar block technic) for the identification of mycoplasma. *Cornell Vet.* **61**: 519-542.

Brogden, K.A., Rose, D., Cutup, R.C., Lehmkuhl, H.D. and Tully, J.G. (1988). Isolation and identification of mycoplasmas from the nasal cavity of sheep. *Anim. J. Vet. Res.* **10**: 1660-1672.

Basanti, B., Pal, B.C. and Singh, P.P. (1992). Pathogenecity of *Mycoplasma mycoides* subsp. *mycoides* LC type in different hosts. The national symposium on "Epidemiology of important livestock and avian diseases including molecular epidemiology and XIII Annual Conference of IAVMI, p. 64.

Freundt, E.A., Erno, H. and Lemcke, R.M. (1976). Identification of mycoplasma. In: The Mycoplasmas, Vol. I, Barile and Razin (edts.). New York, Academic Press.

Freundt, E.A. and Edward, D.G. (1979). Classification and Taxonomy. In: The Mycoplasmas, Vol. I, Barile and Razin (edts.). New York, Academic Press. pp. 1-37.

Nascimento, E.R., Nascimento, M., D.A.G.F., Freundt, E.A. and Anderson, H. (1986). Isolation of *Mycoplasma mycoides* from outbreaks of caprine mycoplasmosis in Brazil. *Brt. Vet. J.* **142**: 246-257.

Lemcke, R.M. (1965). The serological comparison of various species of *Mycoplasma* by an agar gel double- diffusion technique. *J. Gen. Microbiol*. **38**: 91-100.

Polak-Vogelzang, A.A., Hangennars, R. and Nagel, J. (1978). Evaluation of an indirect immunoperoxidase test for identification of *Acholeplasma* and *Mycoplasmas*. *J. Gen. Microbiol.* **106**: 241-249.

Sanguinetti, V., Baldelli, R., and Semproni, G. (1982). *Mycoplasma mycoides subsp. mycoides* LC type from goats in Italy. *Vet. Res. Commun*. **5**: 327-336.