

5-1-1979

Isolation of Mycoplasma from the Genital Tracts of Elephants

Harold W. Clark
noaddress3@noemail.org

Daniel C. Laughlin
noaddress4@noemail.org

Jack S. Bailey
noaddress5@noemail.org

Thomas McP Brown
noaddress6@noemail.org

Follow this and additional works at: <https://digitalcommons.wayne.edu/elephant>

 Part of the [Animal Studies Commons](#), [Biology Commons](#), [Environmental Studies Commons](#), [Population Biology Commons](#), and the [Zoology Commons](#)

Recommended Citation

Clark, H. W., Laughlin, D. C., Bailey, J. S., & Brown, T. P. (1979). Isolation of mycoplasma from the genital tracts of elephants. *Elephant*, 1(3), 9-10. Doi: 10.22237/elephant/1491420344

This Article is brought to you for free and open access by the Open Access Journals at DigitalCommons@WayneState. It has been accepted for inclusion in *Elephant* by an authorized editor of DigitalCommons@WayneState.

CONTRIBUTED ARTICLES/REPORTS**ISOLATION OF MYCOPLASMA FROM THE GENITAL TRACTS OF ELEPHANTS**

by Harold W. Clark, Daniel C. Laughlin, Jack S. Bailey, and Thomas McP. Brown

New findings suggest the clinical importance and need for further investigation of mycoplasma in elephant "rheumatism." The authors, from Chicago and the Arthritis Institute of the National Orthopaedic Hospital in Arlington, Virginia (USA), reported finding arthritogenic agents, mycoplasmas, for the first time in a large group of captive elephants that are frequently crippled with rheumatism. Reporting to the meeting of the American Association of Zoo Veterinarians in Knoxville, Tennessee, emphasized that the finding of widespread occurrence of mycoplasma in captive elephants, as we had found in gorillas, indicates a real need to search for this potentially arthritogenic agent in other exotic animals, especially the other endangered and rare species. The results of our study, even though preliminary, indicate that something positive can be done for the large number of captive elephants crippled with arthritis (25%).

Mycoplasmas have been known to exist and to cause arthritis in domestic animals since the first isolation and description in cattle with pleuropneumonia by French microbiologists Nocard and Roux in 1898. Since then the pathogenicity of these unique microorganisms has been well-established in the production of respiratory, articular, neurological and reproductive manifestations in different animal species. Similar studies of wild or exotic zoo animals with mycoplasma infection have been exceedingly few, with little or no attempt to establish pathogenic significance.

As a result of extensive investigations of mycoplasma and arthritis in the great apes, 66 elephants from circus groups and five zoos in the USA were examined serologically and cultured for mycoplasma in a search for arthritogenic agents previously unrecognized in this animal species. Smears from the oral and genital tracts were cultured for mycoplasma and the related strain of ureaplasma. In one group more than 80% of the female genital tract smears cultured were positive for mycoplasma, whereas none of the oral cavity swabs yielded isolable mycoplasmas. Most of these new elephant isolates grew quite heavily and their metabolic as well as serological differences indicated the presence of at least two different strains. Typical "fried egg" colony morphology was predominant in most isolates, with a mixture of sizes and shapes. Two of the cultures yielded tiny colonies indicating ureaplasmas, another type of mycoplasma.

Of particular interest and importance was the isolation of a human-related strain from an elephant that is known to cause respiratory disease and possibly arthritis in humans. This cross reaction with the human strain was supported by positive serological tests to this strain in several elephants.

Blood specimens from the 66 elephants were serologically tested for mycoplasma antibodies to six human strains and six animal strains as well as 10

of the new elephant mycoplasma isolates. Finding positive mycoplasma antibody titers ranging from eight to 256 to one or more of the elephant mycoplasma isolates suggest both multiple and low-grade infections.

Now that mycoplasma species, known to be potential arthritogenic agents, have been found in elephants, continued long-range clinical investigations of these elephants are being pursued. Studies are currently in progress to determine whether antimycoplasma therapy supported by anti-inflammatory therapy has any effect on reversing the abnormal laboratory tests in conjunction with the elephants' clinical symptoms.

REFERENCES

- Adler, H. E. 1965. Mycoplasmosis in animals. Pp. 205-244, in Advances in veterinary science, Vol. 10 (C. A. Brandley and C. Cornelius, eds.), N. Y. Academic Press, New York.
- Brown, T. McP., H. W. Clark, and J. S. Bailey. 1974. Natural occurrence of rheumatoid arthritis in great apes - a new animal model. Proc. Zoological Soc. Phila. Centennial Sump.:43-79.
- Brown, T. McP., H. W. Clark, J. S. Bailey, and C. W. Gray. 1970. A mechanistic approach to treatment of rheumatoid type arthritis naturally occurring in a gorilla. Trans. Amer. Clin. and Climat. Assoc., 82:227-247.
- Chanock, R. M., L. Hayflick, and M. F. Barile. 1962. Growth on artificial medium of an agent associated with atypical pneumonia and its identification as a pleuropneumonia-like organism. Proc. Natl. Acad. Sci., 48:41-48.
- Clark, H. W., and T. McP. Brown. 1961. Preparation of pleuropneumonia-like organisms for microscopic study. J. Bacteriol., 81:500-502.
- Findley, G., E. Klieneberger, F. O. MacCallum, and R. D. MacKenzie. 1938. Rolling disease: new syndrome in mice associated with a pleuropneumonia-like organism. Lancet, 235:1511.
- Klieneberger, E., and B. Steabben. 1937. On a pleuropneumonia-like organism in lung lesions of rats, with notes on the clinical and pathological features of the underlying condition. J. Hyg. Camb., 37:143-152.
- Knudsin, R. B., T. Rowell, M. C. Shepard, A. Parreno, and C. D. Lunceford. 1975. T-strain mycoplasmas and reproductive failure in monkeys. Lab. Anim. Sci., 25:221-224.
- Langley, E. O. 1940. Contagious pleuropneumonia of goats. Ind. J. Vet. Sci. Anim. Husb., 10:127-197.
- McNutt, S. H., T. S. Leith, and G. K. Underbjirg. 1945. An active agent isolated from hogs affected with arthritis (preliminary report). Amer. Jour. Vet. Res., 6:247.
- Morham, F. S., and S. C. Wong. 1952. Pleuropneumonia-like organisms in the etiology of turkey sinusitis and chronic respiratory disease of chickens. Poultry Sci., 31:902-904.
- Nocard, E., C. R. Roux, M. M. Borrel, and Salibeni, Dujardin-Beaumetz. 1898. Le microbe de la péripneumonie. Ann. Inst. Pasteur, 12:240-262.