BioOne COMPLETE

ISOLATION OF Edwardsiella tarda FROM THREE OREGON SEA MAMMALS 1 2

Authors: COLES, B. M., STROUD, R. K., and SHEGGEBY, S.

Source: Journal of Wildlife Diseases, 14(3) : 339-341

Published By: Wildlife Disease Association

URL: https://doi.org/10.7589/0090-3558-14.3.339

BioOne Complete (complete.BioOne.org) is a full-text database of 200 subscribed and open-access titles in the biological, ecological, and environmental sciences published by nonprofit societies, associations, museums, institutions, and presses.

Your use of this PDF, the BioOne Complete website, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at www.bioone.org/terms-of-use.

Usage of BioOne Complete content is strictly limited to personal, educational, and non - commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

BioOne sees sustainable scholarly publishing as an inherently collaborative enterprise connecting authors, nonprofit publishers, academic institutions, research libraries, and research funders in the common goal of maximizing access to critical research.

Downloaded From: https://complete.bioone.org/journals/Journal-of-Wildlife-Diseases on 28 Mar 2024
Terms of Use: https://complete.bioone.org/terms-of-use

ISOLATION OF *Edwardsiella tarda* FROM THREE OREGON SEA MAMMALS[1][2]

B. M. COLES, R. K. STROUD and S. SHEGGEBY, Veterinary Diagnostic Laboratory, School of Veterinary Medicine, Oregon State University, Corvallis, Oregon 97331, USA

Abstract: Edwardsiella tarda was isolated from the peritoneal exudate of a Steller's sea lion *(Eumetopias jubata)* with peritonitis resulting from a perforating colonic ulcer; from the liver of a harbor porpoise *(Phocena phocena)* with metritis and peritonitis sequela to dystocia; and from the liver of a California sea lion *(Zalophus californianus)* with peritonitis following fracture and necrosis of a lumbar vertebrae. These findings indicate *E. tarda* is a common opportunistic invader in sick or injured marine mammals.

INTRODUCTION

Edwardsiella tarda has been reported as a pathogen in several aquatic animals and birds. It was isolated from abscesses in catfish[3] and was shown to be associated with both enteric disease in aquatic birds and hemorrhagic disease in fish.[7] In marine mammals the isolation of *E. tarda* has been reported from the intestine of a free living Florida manatee *(Trichechus manatus latirostris)* which died from intussusception of the small intestine resulting from an embedded fish hook;[2] from the mesenteric lymph node of a captive California sea lion *(Zalophus californianus)* which died from streptococcal pneumonia;[7] and from mastitis in a bottle nosed dolphin *(Tursiops truncatus).*[4] This report describes the isolation of *E. tarda* from three Oregon sea mammals submitted for necropsy to the Veterinary Diagnostic Laboratory, School of Veterinary Medicine, Oregon State University.

CASE HISTORIES

Steller's Sea Lion *(Eumetopias jubata)*

A subadult female Steller's sea lion was found in a weakened condition on rocks near Florence, Oregon. It died during the night and was submitted to the Veterinary Diagnostic Laboratory. Necropsy revealed intussusception of the small intestine and a fibrinopurulent peritonitis resulting from a perforated ulcer in the posterior colon. The peritoneal exudate was cultured on 5% sheep blood agar and MacConkey's Agar.[3] A pure culture of lactose negative colonies was isolated after 15 h. incubation at 35 C. The isolate was a Gram negative rod which gave a distinctive reaction on Triple Sugar Iron Agar (TSI); enormous amounts of H_2S were produced obscuring the fermentation reaction in the slant. The isolate was identified as *E. tarda* from the following biochemical reactions:

[1] This study was financed in part by a grant from the Oregon State University Graduate School (1973-1975), the Oregon State University Research Council (1975-1976) and the National Marine Fisheries Service (1976-1977).

[2] Technical paper no. 4764 Agricultural Experiment Station, Oregon State University, Corvallis, Oregon 97331.

[3] Difco Laboratories, Detroit, Michigan, 48201, USA

Downloaded From: https://complete.bioone.org/journals/Journal-of-Wildlife-Diseases on 28 Mar 2024
Terms of Use: https://complete.bioone.org/terms-of-use

glucose: acid and gas
lactose: negative
arabinose: acid and gas
dulcitol: negative
mannitol: negative
sorbitol: negative
rhamnose: negative
salacin: negative
arginine dihydrolase: negative
lysine decarboxylase: positive
beta-galactosidase: negative
urease: negative
citrate: negative
malonate: negative
indole: positive

Harbor Porpoise *(Phocena phocena)*

The fresh carcass of a pregnant female harbor porpoise was found on the beach at Florence, Oregon. Postmortem examination showed dystocia, metritis, peritonitis and severe parasitism. The uterus contained an emphysematous full term fetus and foul smelling purulent fluid. Histological examination revealed a purulent metritis and fibrinopurulent peritonitis. There was also severe hepatitis and biliary fibrosis due to adults and eggs of the trematode *Campula oblonga* in the bile ducts. The peritonitis and metritis were directly related to the dystocia. The fluids from the uterus and the peritoneum were cultured on 5% sheep blood agar and MacConkey's Agar, and in Fluid Thioglycollate Media [a] supplemented with 1% bovine serum. No organisms were isolated from the peritoneal exudate but a Gram negative anaerobic rod morphologically identified as *Bacteroides sp.* was isolated from the uterine fluid. A pure culture of *E. tarda* was isolated from the liver cultures.

California Sea Lion *(Zalophus californianus)*

An adult male California sea lion stranded and died at Agate Beach near Newport, Oregon. Necropsy revealed a fibrinopurulent peritonitis and abscessation of the lumbar lymph nodes. A lateral deviation of the lumbar spine resulted from a fracture of the 6th lumbar vertebra. A pure culture of *Staphylococcus aureus* was isolated from the peritoneal exudate and both *Staph. aureus* and *E. tarda* were cultured from the liver.

DISCUSSION

The isolation of *E. tarda* from three species of marine mammals, each dying from a different cause, suggests this organism can be an opportunistic invader in sick or injured animals. Its isolation from a Florida manatee with intussusception[2] and a California sea lion[6] weakened with pneumonia tends to support this contention. There are no reports on the isolation of *E. tarda* from the intestinal tract of healthy marine mammals but, as it has been isolated from gut flora of healthy alligators,[7] fish[5] and gulls,[1] it also may be a normal gut inhabitant of marine mammals. Perhaps it is somewhat analagous to *Escherichia coli,* a ubiquitous enteric organism in terrestrial mammals. *Escherichia coli* is a common secondary and agonal invader in sick animals and the isolation of *E. tarda* from the liver of both the Harbor porpoise and California sea lion indicates this organism may have the same propensity for invasion.

LITERATURE CITED

1. BERG, R.W. and A.W. ANDERSON. 1972. Salmonellae and *Edwardsiella tarda* in gull feces: a source of contamination in fish processing plants. Appl. Microbiol. 24: 501-503.

[a] Difco Laboratories, Detroit, Michigan, 48201, USA

Downloaded From: https://complete.bioone.org/journals/Journal-of-Wildlife-Diseases on 28 Mar 2024
Terms of Use: https://complete.bioone.org/terms-of-use

2. FORRESTER, D.J., F.H. WHITE, J.C. WOODARD and N.P. THOMPSON. 1975. Intussusception in a Florida manatee. J. Wildl. Dis. 11: 566-568.
3. MEYER, F.P. and G.L. BULLOCK. 1973. *Edwardsiella tarda,* a new pathogen of channel catfish *(Ictalurus punctatus).* Appl. Microbiol. 25: 155-156.
4. SWEENEY, J.C. and S.H. RIDGWAY. 1975. Common diseases of small cetaceans. J. Am. vet. med. Ass. 167: 533-540.
5. TRUST, T.J. and K.H. BARTLETT. 1974. Occurrence of potential pathogens in water containing ornamental fishes. Appl. Microbiol. 28: 35-40.
6. WALLACE, L.J., F.H. WHITE and H.L. GORE. 1966. Isolation of *Edwardsiella tarda* from a sea lion and two alligators. J. Am. vet. med. Ass. 149: 881-883.
7. WHITE, F.H. and C.F. SIMPSON. 1973. Isolation of *Edwardsiella tarda* from aquatic animal species and surface waters in Florida. J. Wildl. Dis. 9: 204-207.

Received for publication 23 August 1977

Downloaded From: https://complete.bioone.org/journals/Journal-of-Wildlife-Diseases on 28 Mar 2024
Terms of Use: https://complete.bioone.org/terms-of-use