

Pug Myelopathy Study at Michigan State University

Investigation of Causes of Hind Limb Ataxia and Weakness in Pug Dogs



Jon S. Patterson, DVM, PhD, Dipl. ACVP, Professor
Michigan State University College of Veterinary Medicine
Pathobiology & Diagnostic Investigation, and
MSU Veterinary Diagnostic Laboratory
4125 Beaumont Rd.
Suite 163
Lansing, MI 48910-8104
patter12@msu.edu
office phone: (517) 353-9471

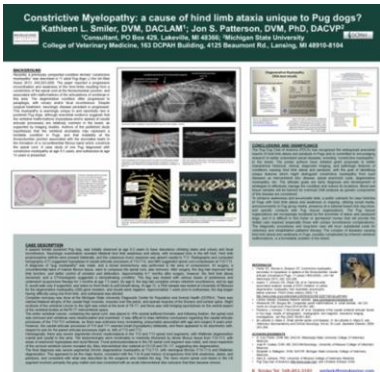
Study participants:

1. Jon S. Patterson, DVM, PhD, Dipl ACVP; Dept. of Pathobiology and Diagnostic Investigation, Diagnostic Center for Population and Animal Health
2. Elizabeth A. Ballegeer, DVM, Dipl ACVR; Dept. of Small Animal Clinical Sciences
3. Kathryn Winger, DVM, Dipl ACVIM (Neurology); Dept. of Small Animal Clinical Sciences
4. Joshua Gehrke, DVM, Dipl ACVIM (Neurology); Dept. of Small Animal Clinical Sciences
5. Anthony Pease, DVM, Dipl ACVR; Dept. of Small Animal Clinical Sciences
6. Nathan Nelson, DVM, Dipl ACVR; Dept. of Small Animal Clinical Sciences
7. Kathleen L. Smiler, DVM, Dipl ACLAM; Consultant
8. Sarvenaz Bagheri, BS; MSU DVM student, Class of 2018
9. Michael Kluz, BS; MSU DVM student, Class of 2018

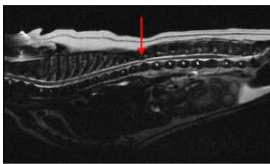
Funded by Pug Dog Club of America



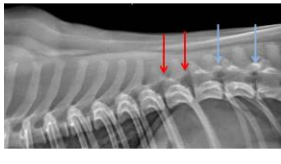
INDEX CASE



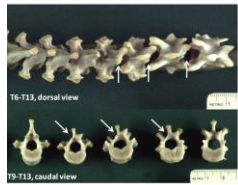
The term "Pug Myelopathy" refers to a complex of spinal cord conditions that usually includes both bony (vertebral) and spinal cord abnormalities. The pathogenetic relations of the various conditions is unclear. Almost all Pugs have underdeveloped (hypoplastic) or absent (aplastic) vertebral articulations to some degree between T11 and L1. Spinal cord lesions have included one or multiple sites of chronic Hansen type II intervertebral disc disease (IVDD); spinal arachnoid diverticulum (SAD); spinal cord atrophy; and fibrosis of the arachnoid layer of the meninges. Dural/arachnoid fibrosis has been described as a component of the condition called "constrictive myelopathy" (CM). Unraveling the relationships between these conditions is one goal of the study at Michigan State University.



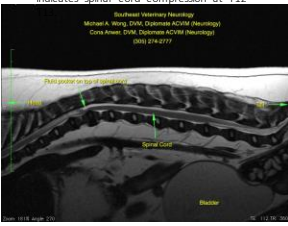
MRI, with contrast, lateral plane, of the spinal cord of the 6-year-old, spayed female Pug of the index case. The red arrow indicates spinal cord compression at T12.



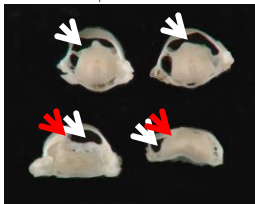
Lateral radiograph of the thoracic spine of an adult Pug. Red arrows indicate hypoplastic or aplastic caudal articular processes on vertebrae T10 and T11, while blue arrows indicate normal caudal articular processes on vertebrae T12 and T13.



Dorsal and caudal views of thoracic vertebrae T9-T13 from a 6-year-old Pug (not the Pug of this report). Arrows point to small (hypoplastic) or absent (aplastic) left caudal articular processes.



A 3D CT reconstruct of the vertebral column of an adult Pug. Hypoplastic left caudal articular process on the T10 vertebra.



Formalin-fixed spinal cord, transverse sections: TOP ROW, left to right: T8-T9, T9-T10; BOTTOM ROW, left to right: T10-T11, T11-T12; marked dilation of subarachnoid space in all sections (white arrows), with grossly apparent arachnoid fibrosis (red arrows) in 2 sections. SAD case.

