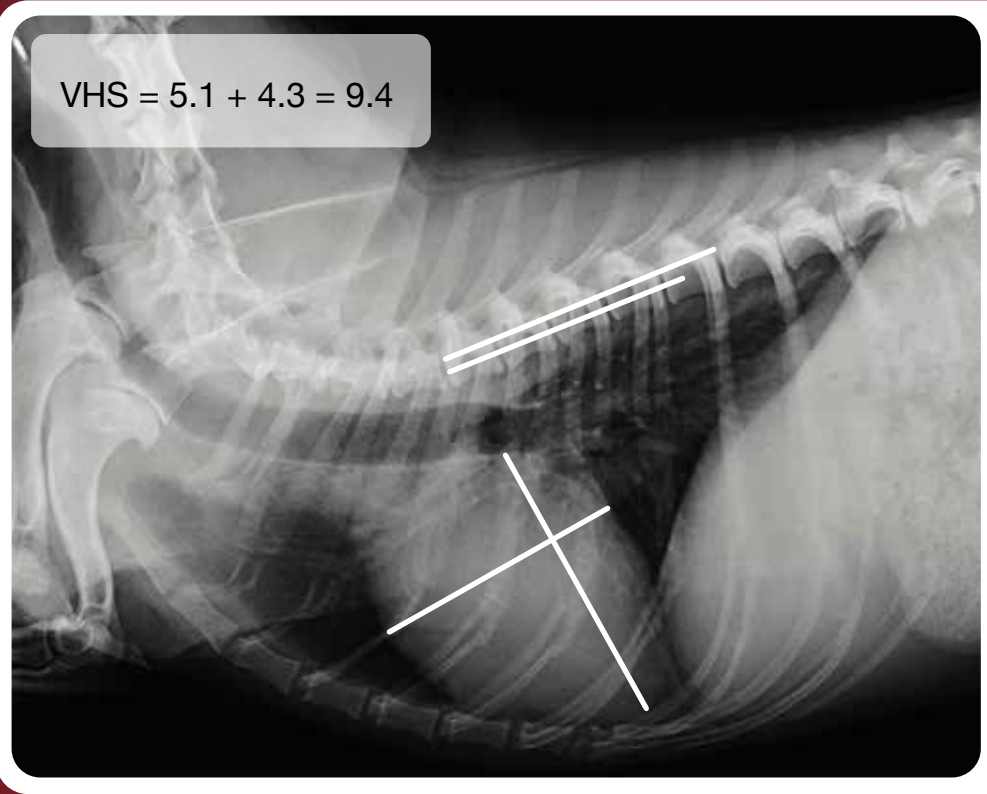
VHS- and VLAS-Calculation in the Dog

Dr. Sonja Schiller-Gaab, Specialist in Internal Medicine-Cardiology

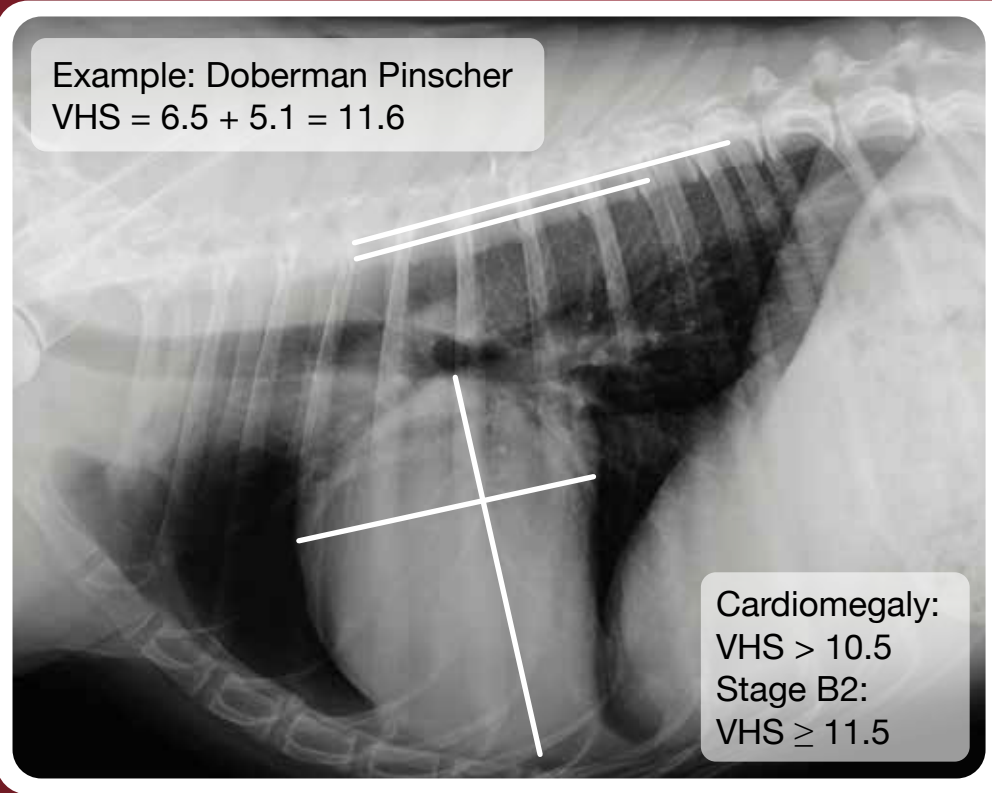
CARING FOR CARDIOLOGY



VHS-Calculation

Measurements and calculation
(right lateral projection):

- Measurement of the **longitudinal axis** of the heart: ventral edge of the bifurcation of the trachea to the apex of heart
- Determination of the **short axis** of the heart: 90° angle to the longitudinal axis, widest point in the middle third of the heart to the ventral edge of the VCC
- Longitudinal axis + short axis in number of thoracic vertebral bodies **starting from the 4th thoracic vertebra = VHS**
- Reference range: **9.7 ± 0.5**[1]

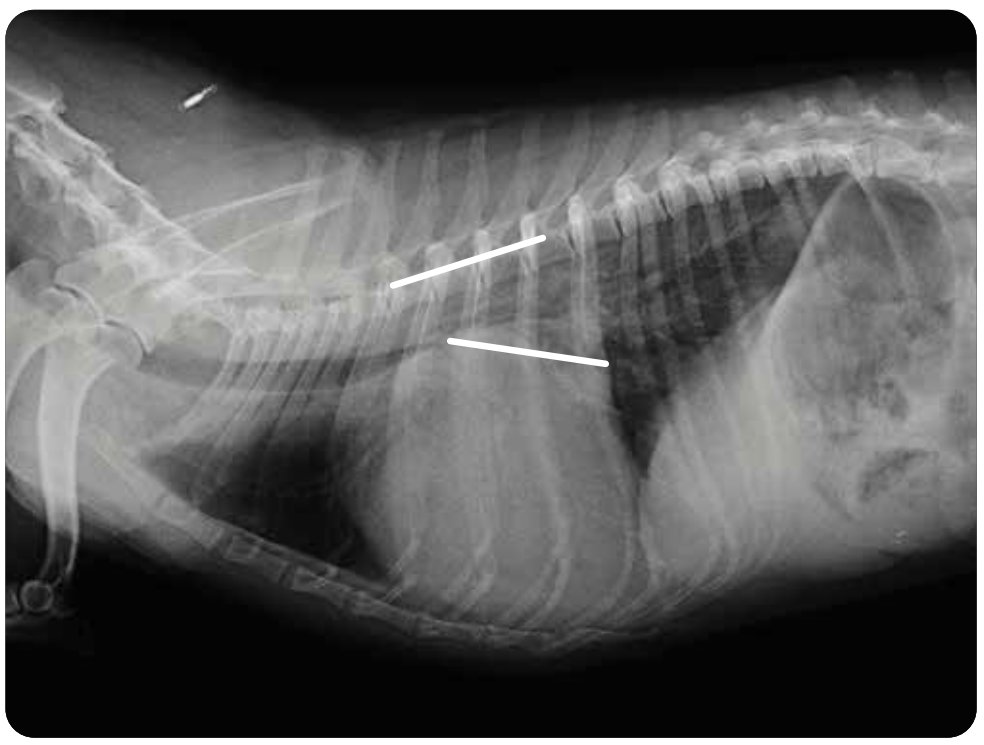


Cardiomegaly - Breed differences[2-4]

Breed	Median +/- SD
Beagle	10.3 +/- 0.4
Boston Terrier	11.7 +/- 1.4
Boxer	11.6 +/- 0.8
Bulldog	12.7 +/- 1.7
CKCS	10.6 +/- 0.7
Dachshund	9.7 +/- 0.5
German Shepherd	9.7 +/- 0.7
Doberman	10.0 +/- 0.6
Greyhound	10.5 +/- 0.1

Breed	Median +/- SD
Labrador	10.8 +/- 0.6
Lhasa Apso	9.6 +/- 0.8
Pug	10.7 +/- 0.9
Rottweiler	9.8 +/- 0.1
Shih Tzu	9.5 +/- 0.6
Whippet	11.3 +/- 0.5
Yorkshire Terrier	9.9 +/- 0.6
Pomeranian	10.5 +/- 0.9

Please note: VHS-reference values are higher in whippets and broad-chested breeds. Correct VHS-calculations are not possible in dogs with wedge vertebrae.



VLAS-Calculation

Measurements:

- Distance from ventral bifurcation of the trachea to the caudal border LA / dorsal border VCC
- The same distance/measurement beginning at the 4th thoracic vertebra = VLAS in number of thoracic vertebrae
- Reference < 2.5[5,6]

In MMVD, administration of pimobendan is indicated from stage B2 onwards[7]

Images courtesy of Dr. Ulf Krohn – Die Hamburger Tierärzte, Specialist Cardiology

Abbreviations: LA: Left Atrium • VCC: Vena cava caudalis • VHS: Vertebral Heart Scale • VLAS: Vertebral Left Atrial Size • MMVD: Myxomatous Mitral Valve Disease • SD: Standard deviation

References: 1) Buchanan JW; Bucheler J. (1995) Vertebral scale system to measure canine heart size in radiographs. *J Am Vet Med Assoc* **206:** 194-9 2) Lamb et al. (2001) Use of breed-specific ranges for the vertebral heart scale as an aid to the radiographic diagnosis of cardiac disease in dogs. *Veterinary Record* **148:** 707-711 3) Jepsen-Grant et al. (2013) Vertebral heart scores in eight dog breeds. *Vet Radiol Ultrasound* **54(1):** 3-8 4) https://www.vin.com/apputil/content/defaultadv1.aspx?pId=84&id=4253805 5) Malcolm et al. (2018) Diagnostic value of vertebral left atrial size as determined from thoracic radiographs for assessment of left atrial size in dogs with myxomatous mitral valve disease. *J Am Vet Med Assoc* **253:** 1038-45 6) Mikawa et al. (2020) Use of vertebral left atrial size of staging of dogs with myxomatous valve disease. *J Vet Card* **30:** 92-99 7) Keene et al. (2019) ACVIM consensus guidelines for the diagnosis and treatment of myxomatous mitral valve disease in dogs. *J Vet Intern Med* **33:** 1127-40

Dechra Veterinary Products A/S, Mekuvej 9, 7171 Uldum, Denmark ·
Dechra Veterinary Products A/S is a trading business of Dechra Pharmaceuticals PLC · www.dechra.com
©Dechra Veterinary Products A/S August 2021

Dechra

100% recycled paper. The paper used is FSC certified.

Stand: 06/2021_MS_WK • Best.-Nr. 299.1405