

# DISH: A hereditary disease of the spine in Australian Cattle Dogs

This article is intended to raise awareness in breeders of Australian Cattle Dogs for a grave health problem of the spine with high heredity.

The disease name is DISH (diffuse idiopathic skeletal hyperostosis) which roughly translates to „unclear increase in bone substance without known cause”.

DISH is common in ACD and until now very often underestimated or unrecognised. DISH often is confused with spondylosis (SD) – the differences will be explained below.

A research project was started at Swiss University of Bern aiming to develop a gene test for DISH. Prof. Tosso Leeb is collecting blood samples of affected dogs and their relatives. X-rays of the spine are analysed and categorised by PD Dr. med. vet. F. Steffen, ECVN.

Until now 75 dogs were sampled (August 2014)

19 DISH affected

10 DISH suspected

46 DISH free

The affected dogs descend from 5 different lines in 4 European nations, both with Australian and US-American background. Pedigree analysis shows a remarkably high heritability, in some lines of descent there are as many as 4 uninterrupted generations of affected dogs recorded.

**From current scientific and veterinarian view it is strongly recommended to take x-rays of the spine before breeding a dog!**

Until development of a gene test the safest breeding choice is to breed only two dogs free of DISH. Current pedigree analysis shows that any DISH affected dog always has at least one affected parent. The exact way of inheritance is not yet clear but without question the heritability is very high. In breeding a DISH affected cattle dog the probability of producing some affected puppies is very high.

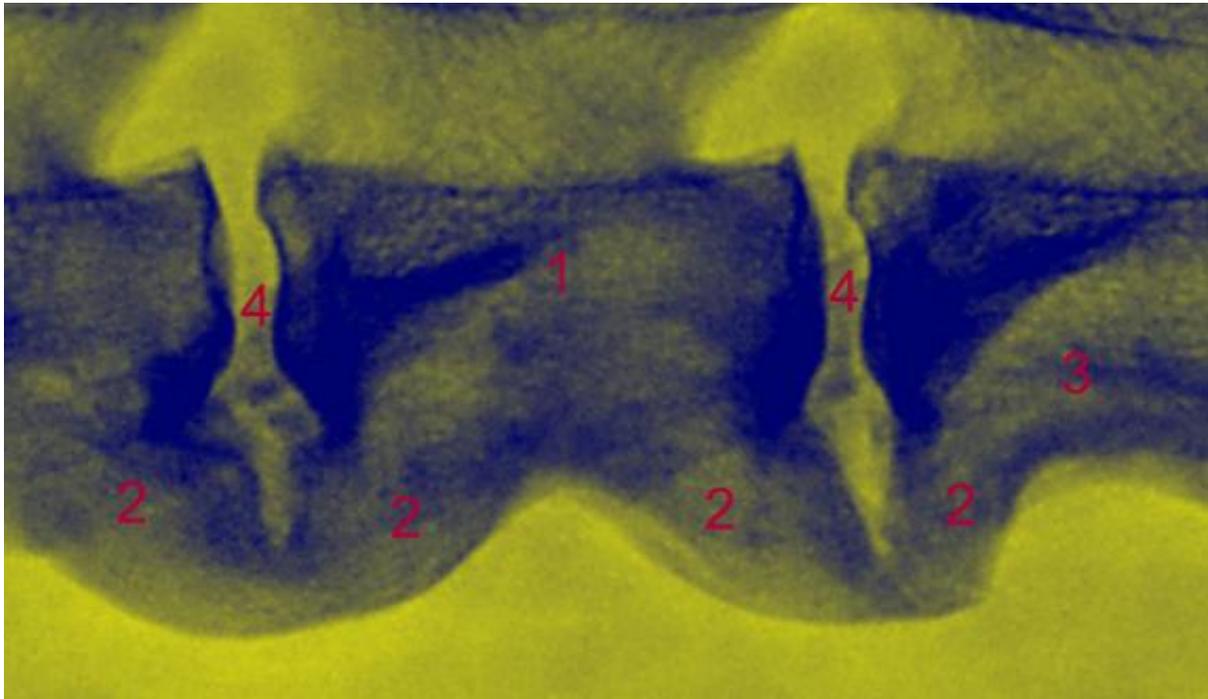
## What is DISH?

DISH (diffuse idiopathic skeletal hyperostosis) is a non-inflammatory process, also known as “bamboo spine”.

In a DISH affected dog the spinal tendons and ligaments (especially the anterior longitudinal ligament) calcify already in a young dog (even before the age of 2 years).

The intervertebral spaces and the intervertebral discs are affected only very rarely.

X-rays show those calcifications have the same bone density as the vertebrae. Calcification begins in the middle of a vertebra. Sometimes a fine line is visible at the original border of the vertebra.



*1 - vertebra, 2 – extreme calcification of the anterior longitudinal ligament ventral of the spine, 3 –fine line, 4 – Intervertebral spaces with discs*

Most frequently DISH affects the lumbar spine although any other part of the spine can be affected as well. It is most infrequent in the cervical region. Interestingly DISH is extremely rare for the lumbosacral region (L7 to S1)

The cause for DISH is yet unknown although a huge genetic component is assumed. There is no reason to believe that overly exercise in young puppies would have any cause in calcification of the anterior longitudinal ligament ventral.

Clinical signs are rare in young dogs affected with DISH. A change in tail carriage, a bent or stiff spine, loss of movability, change of gait (pacing) or refusal to work in otherwise cooperative dogs can be strong indications of problems in the spine.

The amount of clinical signs is dependent of the degree of DISH (number of affected vertebrae) and the age of the dog (in aging muscle power and movability decrease, pain increases).

Dogs with clinical signs may even suffer from both diseases, DISH and SD (spondylosis deformans).

## What is SD?

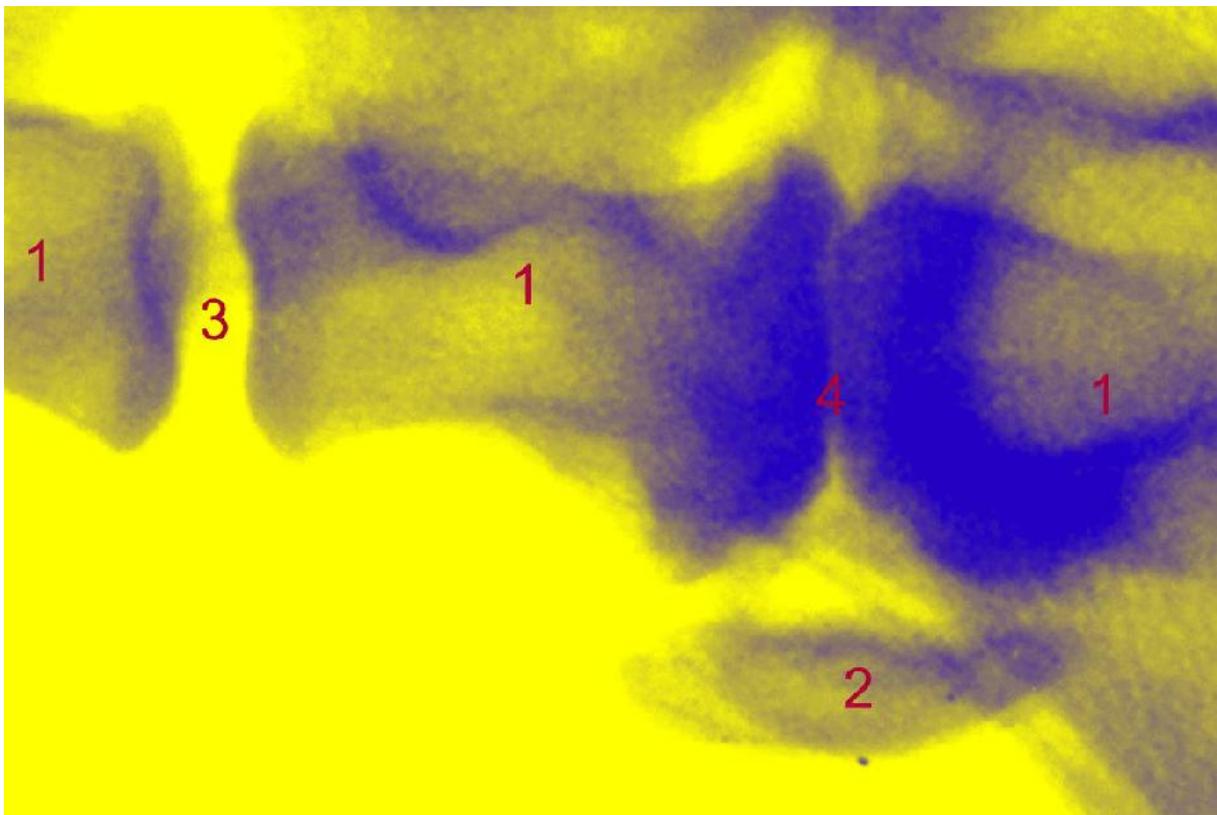
SD (spondylosis deformans) is a degenerative process in the vertebrae and in the intervertebral spaces and discs.

Degenerative means „due to wear.“ Most probably the cause for SD is excessive use of the disc. In repairing small damages and stabilising overmovability the body is growing osteophytes (bone dents) to stabilise the intervertebral space.

The bone density of these calcifications is lower than in DISH and calcification growth does not start in the middle of the vertebrae. This gives a different appearance in x-rays.

Cause for SD is not entirely clear. Besides too much movement and excessive use (trauma) a genetic disposition could be playing a role as well.

Dogs with SD commonly show clinical signs. They utter noises of pain, resist to jump, are limping or even have neurological failures like loss of control of bladder and anus. There are dogs affected from both, DISH and SD. In some cases exact diagnosis is only possible by use of MRI (magnetic resonance imaging).



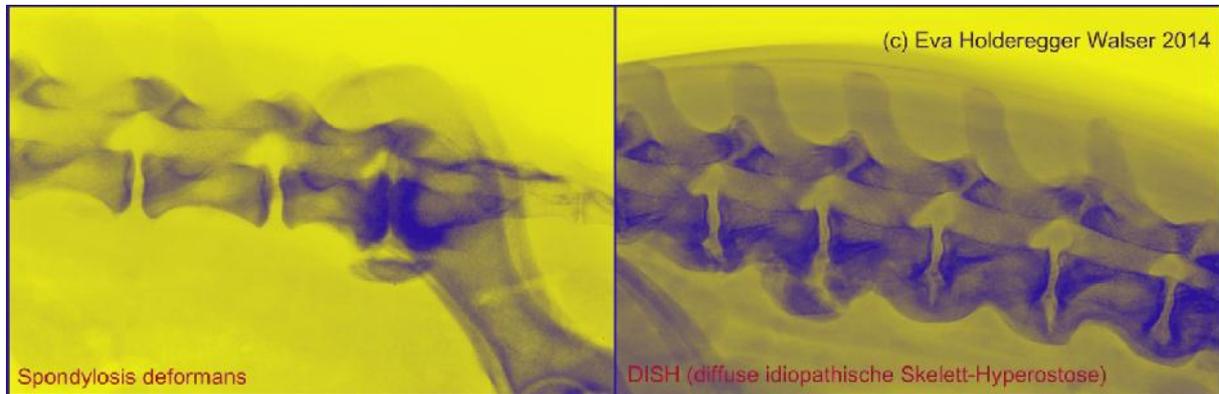
1 - vertebra, 2 – osteophyte (dent), 3 - normal intervertebral space and disc, 4 – severely compressed intervertebral space and disc

**Summary:**

DISH rarely affects intervertebral spaces and discs.

DISH rarely affects L7-S1 (lumbosacral region)

SD often comes with disc problems and commonly shows clinical signs.



Your dog is affected by DISH and you like to support research?

Please contact Eva Holderegger Walser, [eva@cattledog.ch](mailto:eva@cattledog.ch),

or Michaela Wiedmer, [michaela.wiedmer@vetsuisse.unibe.ch](mailto:michaela.wiedmer@vetsuisse.unibe.ch), doctorand at Vetsuisse Institute of Genetics (Prof. T. Leeb):

---

Eva Holderegger Walser, Switzerland ([eva@cattledog.ch](mailto:eva@cattledog.ch))

Mag.rer.nat. Viktoria Kastner, Austria ([cattledog@pleistozaen.at](mailto:cattledog@pleistozaen.at))

med.vet. Maike Jahto, Germany ([maike-jatho@t-online.de](mailto:maike-jatho@t-online.de))

Text and illustrations reviewed by PD. Dr. F. Steffen, ECVN.

English translation by Mag. Viktoria Kastner