

In: **International Symposium on Diseases of the Icelandic Horse**, Veterinary Association Icelandic (Ed.)
Publisher: International Veterinary Information Service (www.ivis.org), Ithaca, New York, USA.

Bone Spavin in Icelandic Horses - Aspects of Predisposition, Pathogenesis and Prognosis (28-Jun-2004)

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Bone spavin is an osteoarthritis (OA) of the centrodistal tarsal joint (CD), the tarsometatarsal joint (TMT) and occasionally the proximal intertarsal joint (PIT).

In a field survey, 614 Icelandic horses in the age range of 6 - 12 year (mean age 7.9 year), and in use for riding were examined radiographically and clinically for OA in the distal tarsal joints. The aim was to estimate the prevalence and clinical relevance of the disease in the riding horse population, to evaluate the effect of potential (environmental and intrinsic) risk factors and to estimate the heritability of the disease. Radiographic signs of OA in the distal tarsal joints (RS) were found in 30.3% of the horses and hindlimb lameness after flexion test of the tarsus was found in 32.4%. There was a significant correlation between the two diagnostic methods and 16.4% of the horses had both RS and lameness after flexion test. The culling rate of the horses in the five following years was significantly affected by RS and the difference in the survival function between horses with and without RS was highest in the age range of 12 – 15 year, demonstrating the late clinical manifestation of the disease. Horses with the combination of RS and a positive flexion test had the poorest prognosis.

The prevalence of RS was strongly correlated to age and tarsal angle (increased as the tarsal angle decreased). The prevalence of lameness after flexion test was not influenced by age but a significant effect of sire was established. The prevalence was higher for horses that were broken to saddle late (6 year or older) and for horses that had not participated in a stud show. The heritability of age-at-onset of RS, reflecting the predisposition for OA, was estimated to be 0.33 and a similar figure was found for the heritability of lameness after flexion test.

In order to detect and describe the earliest changes compatible with OA, specimens from the CD of young Icelandic horses were examined by high detail radiography (0 - 6 year, n = 111) and histology (0 - 4 year, n = 82). Histological chondronecrosis was seen in 33% of the joints, located both medially and laterally. Radiographic sclerosis of the subchondral bone was recorded in 60% of the joints, most often medially. Subchondral bone sclerosis did not appear to be a primary factor of development of OA in the CD but was considered to reflect an uneven distribution of biomechanical forces within the joint.

It was concluded that bone spavin is a common disease in Icelandic horses affecting their durability, although often subclinically manifested. The high prevalence of histological findings in the young horses (1 - 4 year) and radiographical findings in the 6 - 12 year old horses demonstrated an early onset and slow progression of the disease. The initiation of the disease was unrelated to the use of the horses for riding and workload was not found to effect the development of the disease negatively. The medium-high heritability together with the association to the tarsal angle and the radiographic pattern, strongly indicate that poor tarsal conformation or joint architecture, resulting in instability of the joints, is the main etiological factor of the disease.

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