

Agnieszka Pomorska, Krzysztof Lutnicki ©

Department of Internal Medicine of Farm Animals and Horses

Chair and Clinic of Internal Medicine

University of Life Sciences in Lublin

ul. Głęboka 30

20 – 612 Lublin, Poland

NUTRITIONAL SECONDARY HYPERTHYROIDISM (NSP) IN SHETLAND PONIES - CASE STUDY.

Key words: nutritional secondary hyperthyroidism, ponies, clinical signs and examination.

Nutritional secondary hyperthyroidism was described first time in 4 century , nether less it is still recognized very rarely. The authors described often this illness as a big head disease, as well as were described the cases of nasomaxillary sinus area enlargement. This disease is know as Bran Disease, Millers disease. NSP is predominantly recognized and described in these countries, where the horse husbandry is on low level of development. However the occasional cases of this illness are noticed in rich countries too. In Poland in spite of one of the best horse husbandry in the world there are some clinical cases of NSP.

Osteodystropha fibrosa may be observed in the horses in any age, regardless of the gender and breed. Most often the clinical signs are visible in young horses, which were feed with fodder rich in phosphorus (mono diet including oats, clover, barley, maize) and simultaneous Ca , vit. D deficiency for a long time. The increased phosphorus (P) intake leads to diminished vit. D synthesis and gives in consequence the systemic disturbances in Ca/P . Low concentration of Ca leads to secondary hyperthyroidism, it comes to increased activity of PTH as a consequence of Ca/P disturbances and evoke the Ca hypermetabolism in bones and increased elimination of P via kidney (hyperphosphaturia). It causes the bone remodeling in consequence to osteoclasts hyperactivity which gives rise to fibrous tissue redundancy in skeleton. The clinical signs are big head symptoms, cranial bones painfulness, especially jaw bone as well the extremities joint pain .

The first clinical signs are the laminitis, joint sensitivity and rigid walk. In next stadium it comes to fodder intake due to maxillary joints pain and teethes loss. In advanced stages are observed the bilateral nasomaxillary sinus area enlargement.

Diagnosis in his disease is fund on plasma/ urea Ca, P concentration estimations and RTG examination of affected animals. The histopathological examination confirm the diagnosis.

The differential diagnosis include the exclusion any other laminitis reasons, the orthopedic examination of horse in motion is necessary. The neoplasm processes in face bones must be excluded through biopsy.

Healing process is based on diet normalization (correct feed dose), the Ca dose must be increased and P decreased in feed dose. Decreased amount of fodder containing oats (rich in P) must be replaced with good quality hay, rich in Ca. After diet modification the clinical signs of laminitis should to disappear within 1-2 months, however the facial deformations may be irreversible.

Case study.

In Internal Clinic of University of Life Science in Lublin were observed 2,5 years old ,

3 Shetland ponies from October 2010. The actual owner have his animals for 6 moths, he buy them as foals. They were feed with oats, the first deformations in nasal region and whistle breath were observed in one of them in last summer and gradually the signs increased. The motion unwillingness, mastication disturbances appeared gradually in the other ponies too.

One of the animals, stallion exhibit the great leanness, with no possibility fodder intake, nasomaxillary sinus area deformation (Ryc. 1), the breath was visibly whistle. The second horse- mare with forelimb laminitis exhibit the nasomaxillary sinus bone enlargement, the third one- stallion have only mild enlargement of sinus bones.

The results of laboratory measurements are presented in tables below.

Tab. 1.

Hematological values

Parameters	Eryt. [10 ¹² /l]	MCV [fl]	MCH [pg]	MCHC [g/l]	Ht. [%]	Hb. [g/dl]
First stallion	9,45	44,6	14,6	32,6	42,2	13,8
Mare	7,71	57,3	16,2	28,2	44,2	12,5
Second stallion	8,33	42,8	13,4	31,2	35,7	11,1

Parameters	WBC [10 ⁹ /l]	Neutrop [%]	PMNL [%]	Eosinoph [%].	Basoph [%].	Lymphoc [%]	Monocytes [%]
First stallion	5,55	3	68	0	0	29	0
Mare	7,89	1	69	3	0	27	0
Second stallion	8,61	11	69	0	0	30	0

Tab. 2

Biochemical analyses.

Parameters	Urea mg/dl	Creatinine mg/dl	Glucose mg/dl	Ca mg/dl	P mg/dl
First stallion	69,1	1,5	4,7	10,5	1,6
Mare	59,2	1,4	5,4		
Second stallion	68,1	1,5	5,8		



Рис. 1. Cross-section of nasomaxillary region visible bone enlargement and narrow nasal canals.

The RTG examination of maxillary region show the blow-up of marrow caves, the cortex matter of the bone was thin whereas the thick periosteum was observed in regions of distended maxillary bones. Unfortunately the endoscopy of perinaseal sinus was not possible because of its narrowed canals (Ryc. 2).

The first stallion with very escalated symptoms was undergo to euthanasia and during necropsy the material for histopathology was downloaded from nasomaxillary sinus region. This examination confirmed the fibre osteodystrophy.

The next 2 animals after treatment and diet replacement (high Ca content and low phosphorus) were make out from the clinic. During next year it was no disease progress, the laminitis problems receded and maxillary region in stallion become normal whereas in mare was still bold.

References:

1. Taylor F.G.R., Brazill T.J., Hillyer M.H.: Diagnostic Techniques in Equine Medicine. Saunders 2010.
2. Reed S.M., Bayly W.M., Sellon D.C.: Equine Internal Medicine. Saunders, Elsevier, 2004.
3. Dietz O., Huskamp B.: Praktyka Kliniczna: Konie. Galaktyka 2008.
4. Tuckey J.C.: Nutritional Causes of osteodystrophia fibrosa. Australian Equine Veterinarian. 14, 1996.
5. Menard L., Marcoux M., Hallen G.: A Possible Case of Osteodystrophia Fibrosa Cystica in Horse. Can. Vet. J. 20,242,1979.