INJURIES OF LIMBS STRUCTURES OF LOCOMOTION APPARATUS IN TWO-YEAR OLD THOROUGHBREDS BEING IN RACING TRAINING

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Summary. The idea of the research was following the schedule of morbidity on individual diseases of limbs structures of locomotion apparatus in two-years old thoroughbred horses being in racing training. Investigative material presented 850 persons. Each horse was monitoring from the half of December of the year in which it has arrived on a race track, to the end of next calendar year. Ascertain, that injuries of locomotion apparatus concerned over 60% of animals in researched population. Most frequently, disease concerned on soft structures of the limbs locomotion apparatus, but particularly, muscles, tendons and ligaments. In the midst of tendonitis, most often ascertained inflammations of interosseous muscles. In main measure injuries in thoracic limb, especially on the left part were observed.
Keywords: horse, limb, musculoskeletal system, injury

DVEJŲ METŲ GRYNAVEISLIŲ ŽIRGŲ GALŪNIŲ TRAUMOS

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Santrauka. Darbo tikslas – įvertinti dvejų metų treniruojamų grynaveislių žirgų galūnių traumų dažnumą. Ištirta 850 individų. Kiekvienas žirgas treniruočių vietoje buvo stebimas nuo gruodžio vidurio iki kitų kalendorinių metų pabaigos. Nustatyta, kad 60 proc. tirtų žirgų judėjimo aparatas buvo pažeistas. Dažniausiai pažeidimai buvo susiję su galūnių raumenimis, sausgyslėmis ir raiščiais. Daugiausia traumų susiję su tarpkaulinių raumenų sausgyslių uždegimu. Dauguma pažeidimų nustatyta priekinėse galūnėse.
Raktažodžiai: žirgas, galūnės, griaučiai ir raumenys.

Introduction. Locomotion apparatus of the animals – *motorium*, consisted of the following structures – skeleton *sceleton*, connections of bones – joints *articulationes* as well as muscles – *musculi*.

In two-year old thoroughbred horses, diseases of locomotion apparatus in majority concerned on limbs. Amongst diseases concerning on bones of limbs, some can be related with disturbance of growth of epiphysial cartilages i.e. *chondrodysplasis* (Scheibitz, 1983), *osteochondrosis* (Fubini et al., 1999; Hurtig and Pool, 1996; Philipsson, 1996; McIlwraith, 1996; Wiśniewski, 1994; Smallwood and Kelly, 1991).

The aim of research. The purpose of undertaken research was following the schedule of morbidity on individual diseases of soft structures of limbs locomotion apparatus in two-year old thoroughbred horse's subjected racing training. It defined also, which structure of locomotion apparatus most often focused to injury; what kind are there; which limbs concerned most often (right, left, thoracic, pelvic).

Material and methods. Investigative material presented 850 two-year old thoroughbred horses of both sexes, representing four age groups (1984 - 1987) from polish farm. Animals have arrived on Warsaw horse race gauge in purpose of proceeding of racing training. Subsequently these horses took part in flat pursuits. These horses, defined as „yearly", have hit on a gauge on fall of next year, relatively to year of birth so; they did not have finished two years old. Animals were subjecting to observation in direction of limbs trauma in the period of four years, from the half of December 1985 to the end of year 1989. Each person was monitoring from the moment of arrival to the end of next calendar year. In a case of pronouncement limping or visible pathological changes, horses were subjecting to detailed research in the Veterinary Hospital of horse at Służewiec in Warsaw.

It performed analysis of pathological condition in foothold about clinical reconnaissance of individual cases. With reference to injuries of soft structures of limbs locomotion apparatus as well as their results, it divided patients according to kind of pathology and disabled structures (muscle, tendon, synovial bursa, fibrous and synovial tendon sheaths), kind of damage or even limbs (left or right, thoracic or pelvic). Injuries and its results was

treating into following category: myositis – *myositis*, tendinitis – *tendinitis*, tendosynovitis – *tendosynovitis*, inflammations of tendon sheaths – *bursitis* and atrophy of muscles – *musculi atrophia*.

It was treating also, which limb undergoes injuries most often, in subsequently categories: left, right, thoracic, pelvic.

Results and discussion. On a base of observation of 850 two-year old thoroughbreds cultivating local breeding, subjected four years racing training, determined that at least 60,4% researched population presented injury of some structures of locomotion apparatus. Injuries of limbs at some persons take a stand more than once; in general incorporate 861 such cases.

In the midst of all established diseases of limbs, most frequent pathological conditions dealt to soft structures of locomotion apparatus i.e.: muscles, tendons and ligaments. Injuries of joints as well as diseases of bones of limbs, with their subsequently injuries, have turned out less numerous. Remaining, more rarely frequent cases of the diseases presented damages of soft tissues like as contusions, wounds, *hematomas* as well as *phlegmons*. Amongst these ascertained diseases of hoof structures (inflammations of proper skin). It exerted at single persons ataxy of limb locomotion apparatus, three cases have been unidentified (data unpublished).

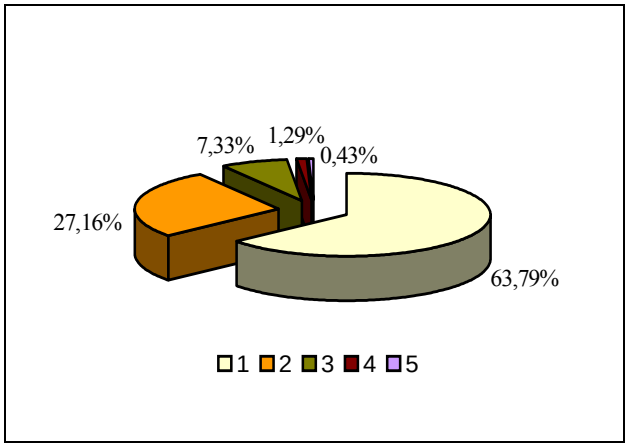

Fig. 1. **Percentage of muscles, tendons and ligaments disease of the limb in total their traumatism:** 1 - *myositis,* 2 - *tendinitis*, 3 – *tendovaginitis*, 4 – *atrophia*, 5 - *bursitis*

In the midst of injuries of soft structures of limbs locomotion apparatus most often take note injuries of muscles, tendons and ligaments. In general, it write down such cases (232 on all 861 incorporated injuries of limbs) so, that presented 26,9 %. Among these cases, *myositis* ascertained 148 times, *tendinitis* - 63 times, *tendosynovitis* - 17 cases, atrophy of muscles were triple. In one case established inflammation of tendon sheath (Fig.1).

There was said also, that percentage of all incorporated cases of injury of locomotion apparatus in thoracic limbs considerably exceeded these found in pelvic limbs (Fig. 2).

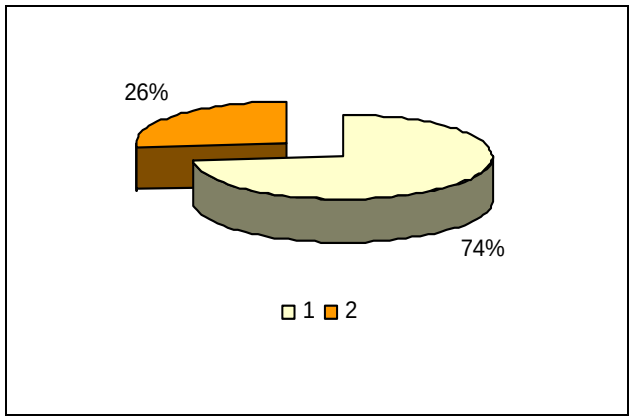

Fig. 2. **Percentage of front limb traumatism (1) and hind limb traumatism (2) in total limb's traumatism:**

Differences of injury frequency between thoracic and pelvic limbs results firstly as a cause of those thoracic limbs have greater body weight ballast relatively to pelvic limbs. Arise from that site of body heaviness point of a horse. Additional boosted loads of thoracic limbs at racing horses is a result of peculiar mount of rider, in which this point is removed toward forward as a purpose of stretching of action horse in gallop. Differences of injury frequency among limbs were particularly distinct in a case of *digital flexor tendinitis*. It writes down in thoracic limbs 60 such cases, in pelvic limbs only three (Fig.3).

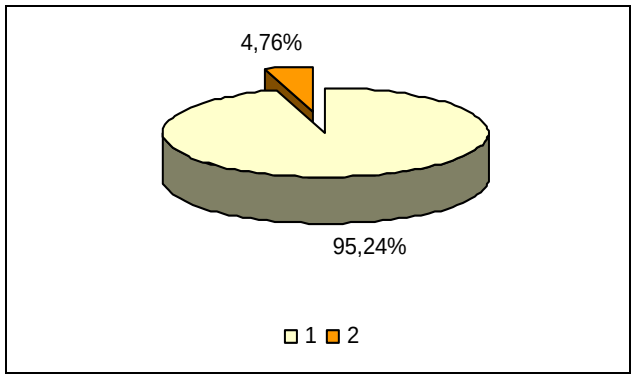

Fig. 3. **Percentage of *digital flexor tendinitis* in front (1) and hind (2) limbs**

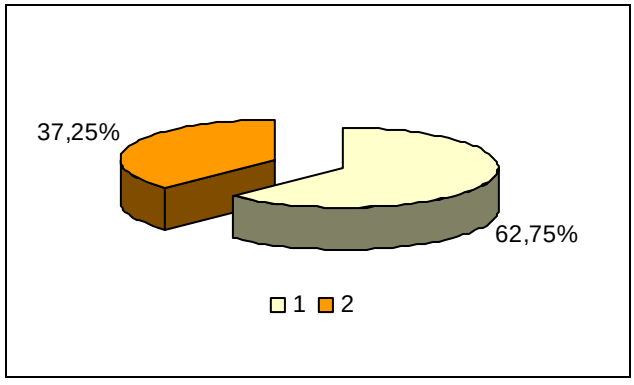

Fig. 4. **Percentage of *miositis* in thoracic limbs (1) and in pelvic limbs (2)**

Myositis was numerous in researched population. They concerned in thoracic limbs in 96 cases and in 57 cases in pelvic limbs (Fig. 4).

Ascertain that *tendinitis* as well as *myositis* of the abdominal part of muscle took a stand in left limbs most frequent. These differences were smaller than in a case of occurrence between thoracic and pelvic limbs (Fig.5).

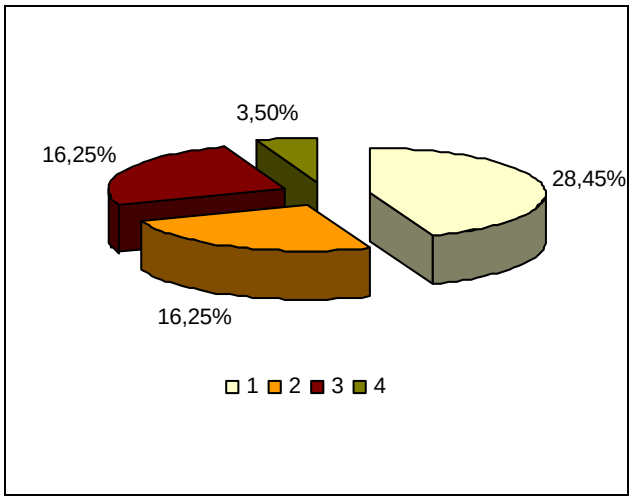

Fig. 5. **Ration and percentage of digital flexor *tendinitis* in particular limbs in two-year old thoroughbred horses: 1 – left thoracic limb, 2 – right thoracic limb, 3 – both thoracic limbs, 4 – left pelvic limb**

In general, found 63 cases of *tendinitis*. Ten cases concerned in superficial digital flexor, seven cases disturbed both digital flexors of muscles and in 46 cases were *myositis* of interosseous muscles. Therefore, highest percentage presented *myositis* of interosseous muscles, next – *tendinitis* of superficial digital flexor and rarely *tendinitis* of both digital flexors muscles – superficial and deep (Fig.6).

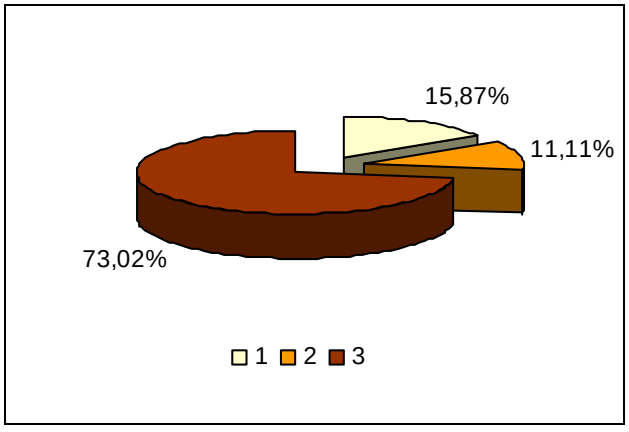

Fig. 6. **Percentage of *tendinitis*: digital flexor superficial (1), both digital flexors muscles – superficial and deep (2) interosseous muscles (3) in two-year old thoroughbred horses**

Conclusions. On a base of gotten results as well as they comparisons and analyses, it is possible to present following conclusions:

1. Injury of limbs locomotion apparatus in two-year old thoroughbreds being in racing training concerned over 60% population.
2. Most numerous groups of diseases disturbed on soft structures of locomotion apparatus.
3. Particularly, they concerned on injury of muscles, tendons and ligaments of the limbs.
4. It observed distinct superiority of injury of soft structures of locomotion apparatus of thoracic, especially left limb.
5. In the midst of *tendinitis*, highest percentage presented *myositis* of interosseous muscles, subsequently *tendinitis* of superficial digital flexor and most rare *tendinitis* of both digital flexors muscles – superficial and deep.

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