

TECHNOPATHIES IN DAIRY COWS - PERITARSALES LESIONS

TEHNOPATIJE KOD MLEČNIH KRAVA – PERITARZALNE LEZIJE

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ABSTRACT

Technopathies in dairy cows represent a complex interplay between technological advancements, management practices, and animal health. While technological innovations have undoubtedly improved efficiency and productivity, they also introduce new challenges, particularly in relation to the health and welfare of dairy cows. Lameness associated with claw pathology is one of a prevalent technopathy in dairy cows. However, it can be associated also by other pathologies, including peritarsal lesions. This paper aims to explore the peritarsal lesions in dairy cows, their prevalence in selected Slovenian herds and their connection to flooring and cubicle type. Tarsal region was evaluated in 16 dairy herds in NE Slovenia. We assessed 881 dairy cows. Type (alopecia, erosions, decubitus, swelling) and size (up to 3 cm², < 20 cm², < 50 cm² and >50 cm²) of lesions were documented. In all herds type of flooring and cubicles were recorded including their size and occupancy %. Results were statistically evaluated using descriptive statistics, correlations and ANOVA analysis. Significance was set at p<0.05. Out of 881, 373 (42.3%) had peritarsal lesions. The prevalence on herd level was from slightly above 2 to more than 70%. We noticed that peritarsal lesions are more prevalent in herds with high cubicles, than in those with deep cubicles. Cubicle occupancy rate statistically non-significantly influenced peritarsal health. Results of the study surprised us, as we have expected far lower prevalence of peritarsal lesions. A positive fact is that we also had a herd with very favorable status concerning hock lesions, which proves that much better situation in this issue can be achieved. Collaborative efforts among researchers, veterinarians, and farmers are essential for identifying key issues leading to technopathies, implementing effective mitigation strategies, and promoting sustainable dairy farming practices.

Keywords: peritarsitis, cattle, trauma, technology induced pathology

SAŽETAK

Tehnopatije kod mlečnih krava predstavljaju složenu interakciju između tehnološkog napretka, prakse upravljanja i zdravlja životinja. Dok su tehnološke inovacije nesumnjivo poboljšale efikasnost i produktivnost, one takođe uvode nove izazove, posebno u vezi sa zdravljem i dobrobiti muznih krava. Hromost povezana sa patologijom papaka je jedna od rasprostranjenih tehnopatija kod mlečnih krava. Međutim, može se povezati i sa drugim patologijama, uključujući peritarzalne lezije. Ovaj rad ima za cilj da istraži peritarzalne lezije kod muznih krava, njihovu prevalenciju u odabranim slovenačkim stadima i njihovu povezanost sa podom i tipom boksa. Tarsal region je evaluiran u 16 muznih stada u SI Slovenije. Ocenili smo 881 kravu muzaru. Dokumentovani su tip (alopecija, erozije, dekubitus, otok) i veličina (do 3 cm², < 20 cm², < 50 cm² i >50 cm²) lezija. U svim stadima evidentirani su tipovi podova i objekata

uključujući njihovu veličinu i popunjenost u %. Rezultati su statistički procenjeni korišćenjem deskriptivne statistike, korelacija i ANOVA analize. Značajnost je postavljena na $p < 0,05$. Od 881, 373 (42,3%) imalo je peritarzalne lezije. Prevalencija na nivou stada bila je od nešto iznad 2 do više od 70%. Primetili smo da su peritarzalne lezije zastupljenije u stadima sa visokim boksovima, nego u onima sa dubokim boksovima. Stopa zauzetosti objekta statistički nije značajno uticala na zdravlje peritarza. Rezultati studije su nas iznenadili, jer smo očekivali daleko manju prevalenciju peritarzalnih lezija. Pozitivna činjenica je da smo imali i stado sa veoma povoljnim statusom u pogledu lezija skočnog zgloba, što dokazuje da se po ovom pitanju može postići mnogo bolja situacija. Zajednički naponi između istraživača, veterinara i farmara su od suštinskog značaja za identifikaciju ključnih pitanja koja dovode do tehnopatija, implementaciju efikasnih strategija za ublažavanje uticaja i promovisanje održivih praksi uzgoja mleka.

Ključne reči: peritarzitis, goveda, trauma, tehnologijom izazvano oboljenje

INTRODUCTION

Technopathies, or technology-induced pathologies, are increasingly becoming a concern in dairy farming as an advance in the sector reshape the industry. Lameness associated with claw pathology is one of a prevalent technopathy in dairy cows, often exacerbated for example by the introduction of concrete flooring in housing systems and the prolonged periods of standing associated with automated milking systems. However, there are also other causes of lameness, such as hock lesions associated with trauma from laying surfaces. Lameness not only affects the welfare of cows but also leads to decreased milk production and reproductive performance. Strategies such as providing comfortable resting areas, regular hoof trimming, and optimizing flooring surfaces can mitigate the risk of lameness. In European Union (EU) countries, including Slovenia, consumers not only want a wider choice of animal-friendly food products, but also more information about how farm animals are reared and stricter animal welfare than is currently practiced. It is therefore to be expected that more animal products will be labeled for animal welfare in Slovenia in the future, as is already the case in some EU countries. In this context, the prevention of technopathies will come to the fore in the near future, as the regulations are going to require action when they will become noticed. It is important that veterinary and animal science profession is well prepared for these changes as they

are going to be vital in advising farmers when they seek solutions to improv situation concerning technopathies. All this resulted in decision to study prevalence of technopathies in selected dairy farms and connect them to farm characteristics. In this work peritarsal lesions are going to be studied.

MATERIALS AND METHODS

Tarsal region of cows was evaluated in 16 dairy herds with free stall type housing system in North-East Slovenia. In total 881 dairy cows were assessed. Type (alopecia, erosions, decubitus, swelling) and size (up to 3 cm², < 20 cm², < 50 cm² and >50 cm²) of lesions were documented. In all herds cubicles were recorded including their size and occupancy index (number of cubicles/number of cows).

RESULTS

Peritarsal lesions were noticed in 373 cows (42.3%) out of 881 checked. The prevalence on herd level was from slightly above 2 to more than 70%. We noticed that peritarsal lesions are more prevalent in herds with high cubicles (more than 60% animals were affected), than in those with deep cubicles (less than 30% animals were affected). Interestingly higher occupy rate (<1) was associated with less peritarsal lesions though there was no statistically significant difference.

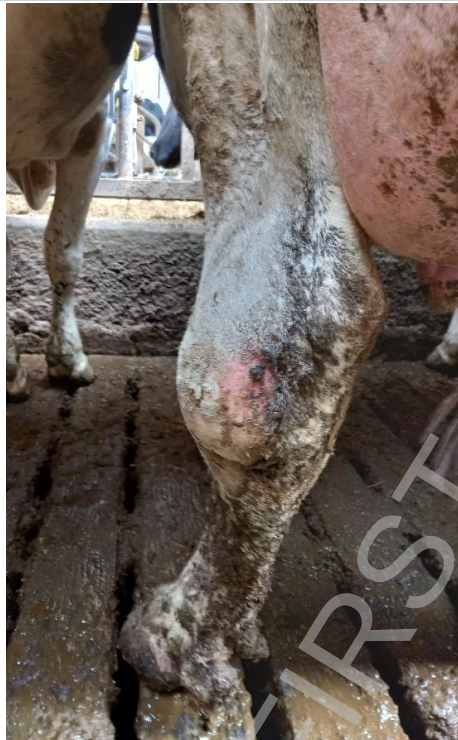


Figure 1. Extensive swelling, alopecia and erosions of peritarsal region in dairy cow
Results were statistically evaluated using descriptive statistics, correlations and Anova. Significance was set at $p < 0.05$.

DISCUSSION

Authors encountered difficulties in measuring the occurrence and severity of peritarsal injuries, as it is very hard to say what the extent and type of injury means for the animal. This is probably also a reason that there are not many scientific works about this topic available in the literature and that its use in animal welfare assessing is limited. Results of the study surprised us, as we have expected far lower prevalence of peritarsal lesions. A positive fact is that we also had a herd with very favorable status concerning hock lesions, which proves that much better situation in this issue can be achieved. Further much of the variation is also a result of the fact that a lesion can range from severe and extensive to a minor skin abrasion. A Canadian study found even that more than 75% of dairy cows had some form of hock lesion and they considered all forms, from minor to major (Weary & Taszkun, 2000). Judgement of lesions is not straight forward and further research evaluating the gravity of peritarsal lesions for animal welfare using additional more precise equipment is needed.

High cubicles caused more peritarsal lesions than deep cubicles. When they compared cows in large, well-bedded stalls with cows in narrow tie stalls with concrete surfaces, they found that the cows in the large, well-bedded stalls spent approximately four hours more per day lying down (Haley et al., 2001). This clearly indicates that the lying area was more comfortable. Thus, the main difference between cubicle types is just the presence or absence of bedding (deep cubicles have much more bedding than high cubicles, which had only rubber mats and minimal or no bedding material. Our opinion is that the type of lying surface and the amount of bedding material play a pivotal role in the prevalence of peritarsal lesions and not the type of cubicles.

The result that there are fewer peritarsal lesions in crowded herds is controversial. We assume that this is due to other factors, such as a better type of cubicles, younger cows in a herd, etc. Our results show that statistical indicators need to be evaluated very carefully and that all possible influences need to be considered before drawing conclusions.

According to literature lameness associated with upper-leg problems seems to have a larger effect on

the cows' feed intake and milk production than does lameness associated with hoof problems (Bareille et al., 2003). However, this cannot be proven with our study, but must be considered in future research, as this information has a decisive influence on the fate of cows in a herd, their longevity.

While technology offers promising solutions for improving efficiency and productivity in dairy farming, where we notice continuous improvements. However longevity of animals is lacking behind, so

it is imperative to prioritize the welfare of cows and minimize the negative impacts of technological interventions. Collaborative efforts among researchers, veterinarians, and farmers are essential for identifying key issues leading to technopathies, implementing effective mitigation strategies, and promoting sustainable dairy farming practices. Additionally diagnostic methods for evaluation of peritarsal lesions need improvement.

LITERATURE

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