

Tail-Tip Necrosis in Beef and Dairy Cattle: A Report of Seven Cases in Ankara

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Summary

Tail-tip necrosis has long been recognized as a disease condition occurring in cattle housed on slatted-floors. The disease has been reported in heifers, steers and bulls with beef production. In the present article the authors describe macroscopically diagnosed tail-tip necrosis in a total of seven beef and dairy cattle observed in Ankara. Diagnosis of tail tip necrosis was made on the basis of clinical examination and descriptive analysis of gross lesions. The present article highlights the importance of including tail-tip necrosis on the list of differential diagnoses for diseases characterized by involvement of the musculoskeletal system, consisting of the tail.

Keywords: *Tail-Tip Necrosis, Beef, Dairy, Cattle*

Ankara'da Etçi ve Sütçü Sığırlarda Kuyruk Ucu Nekrozu: Ankara'da 7 Olgunun Sunumu

Özet

Kuyruk ucu nekrozu uzun yıllardır sert zeminli ahırlarda bakılan sığırlarda meydana gelen bir hastalık olarak bilinmektedir. Hastalık etçi yönlü yetiştirilen düvelerde, inek ve boğalarda bildirilmiştir. Bu makalede yazarlar Ankara ilinde toplam yedi etçi ve sütçü sığırda makroskopik olarak gözlemlenen kuyruk ucu nekrozunu tanımlamaktadırlar. Kuyruk ucu nekrozunun tanısı klinik muayene ve makroskopik olarak gözlemlenen lezyonların tanımlayıcı analizleri ile konulmuştur. Bu makale ile kuyruğuda içeren iskelet-kas sistemi hastalıklarının ayırıcı tanısında, kuyruk ucu nekrozunun öneminin vurgulanması amaçlanmaktadır.

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INTRODUCTION

Tail tip necrosis, one of the diseases characterized by involvement of the musculoskeletal system¹, especially occurs in beef cattle housed in confinement on slatted-floor^{1,2}. The risk factors associated with the disease included slatted concrete floors, closed keeping and management, warm climatic conditions and a total body weight above 200 kg¹.

Limited aetiological surveys have been performed up to date regarding the tail necrosis cases. Suggested causes reported were selenium toxicosis, fly strike, ergotism³, fescue toxicosis⁴, tail-biting especially in veal calves⁵, trauma^{3,5} and Deg-Nala disease⁶⁻⁸.

The aim of the present article was to assess the importance of including tail-tip necrosis on the list of differential diagnoses for diseases characterized by involvement of the musculoskeletal system, consisting of the tail. A further aim also was to review the etiology of tail tip necrosis and its possible causes, and to indicate the possible treatment choices. This disease and related clinical signs may be due to the management failure and bad sanitary conditions, as well it may be sporadic or with considerable prevalence.

CASE HISTORY

Through early 2004 to 2007 February, all diagnosed cases of cattle with tail tip necrosis were included. A total of seven cattle, comprising five Simmental breed and two Holstein breed, at the age of between 1.5 to 6 years, of both sexes, were included.

A total of two Holstein cow independently housed on slatted floors at two different farms were enrolled in the present article. The first case, a Holstein cow at the age of two years was referred to the Department of Internal Medicine Faculty of Veterinary, Ankara University with a history of lesions confined to the tail. Interestingly the present authors did not record or detected any previous similar condition in dairy cattle, as tail tip necrosis occur mainly in beef cattle.

After that time the present authors began to priory inspect tail of all cows routinely examined. Following inspection, physical examination was performed independently by three of the present authors (KU, DA and MCK) and observed gross lesions were described by three other authors (SA, AEH and CCC), independently, according to the size of the hairless area, dermato-cosmetic alterations and to the degree of clinical sings consisting inflammation and infection, as described previously⁹.

All diagnosed cases, including a total of seven cattle were enrolled at routine clinical examination performed at the Veterinary Faculty, Department of Internal Medicine, Ankara University or recorded during the visits on local farms at private practice in Ankara. The results are shown in *Table 1*.

A total of two dairy cattle, Holstein cows, independently housed on slatted floors at two different farms were enrolled. The first case, a Holstein cow at the age of two years was referred to the Department of Internal Medicine Faculty of Veterinary, Ankara University with a history of lesions confined to the tail. Interestingly the present authors did not record or detected any previous similar condition in a dairy cattle, as tail tip necrosis occur mainly in beef cattle. According to the herdsmen the disease initially appeared as a localized lesion at the tip of the tail following a traumatic injury by another bull in the same herd. The onset of the disease coincided with late May 2004, when the temperature was exactly above 18°C, as it is very usual in Ankara. The tip of the tail was initially swollen, and was followed by sings of inflammation in about a week. On referral at clinical examination including inspection and routine physical evaluation, except the lesion on the tail, the cow was otherwise healthy. The necrosis was localized on the tip of the tail with no metastases to any other part of the body visually observed and there is no sign of pyemia. Complete blood counts did not reveal any abnormalities. Serum biochemical analysis and urinalysis were also performed; all results were within normal ranges. The second case was another Holstein cow housed on slatted floor. The necrosis was localized 5-6 cm proximally from the tip of the tail with infected and hairless area, covered with

circumscribed crust (*Table 2*).

Table 1. Number of dairy and beef cattle recorded for tail tip necrosis.

Tablo 1. Kuyruk ucu nekrozu saptanan sütçü ve etçi siğirlerin sayısı

Type of Floor	Dairy cattle Holstein	Dairy-Beef cattle Simmental
Slatted floor	2	3
Solid floor	-	2

After that time the present authors began to priory inspect tail of all cows routinely examined. Additionally five Simmental cattle were also examined and detected to have tail tip necrosis, then were analyzed and described according to gross appearance (*Table 2*).

Only in one case amputation was discussed with the owner, who accepted. The necrotic parts on the tail tip was amputated and rejected and forwarded to laboratory for histopathological examination. However the owner was lost for follow up, so that histopathological evaluation was not shown. In the rest of the cases treatment included IV antibiotic administration and topical antibacterial applications.

Table 2. Descriptive analysis of gross lesions observed for tail tip necrosis in dairy and beef cattle in Ankara

Tablo 2. Ankara'da etçi ve sütçü siğirlerde gözlenen makroskopik kuyruk ucu nekrozunun tanımlayıcı analizi

Case no	Sonuç
1	Hairless area, extending 4 cm proximally from the tip of the tail
2	Infected and hairless area, extending 5-6 cm proximally from the tip of the tail, covered with circumscribed crust
3	Infected area with sever suppuration, extending 3-4 cm proximally from the tip of the tail
4	Infected and hairless area, extending 4.5- cm proximally from the tip of the tail
5	Hairless area, extending 2.5 cm proximally from the tip of the tail.
6	Phlegmonous area, accompanied by gross abscess formation involving 7-8 cm of the tail.
7	Hairless area completely white in color, extending 2-3cm proximally from the tip of the tail, advanced stage of necrosis.

DISCUSSION

Tail tip necrosis has long been recognized as a problem in all slatted floor feedlots ³. It is deemed a major problem in slatted floors ^{2,3}, where as in solid floor condition it is not a problem. However previous researchers reported some cases in other floor types ^{10,11}. In the present study five out seven cattle with tail tip necrosis were housing in slatted floor, where as, interestingly, two cases were housed in solid floor type. Although the sample population is limited and based on such a low sample size it is very hard to draw conclusions, the present authors hypothesize that both slatted and solid floor types may cause tail tip necrosis. Moreover in a previous survey in beef cattle with tail tip necrosis, despite the fact that feedlot type (i.e. slatted or solid floor) was established as the major factor for occurrence of the disease, it has been suggested that other factors may also have effect on the onset of tail tip necrosis ⁹.

To the present authors' knowledge there have been limited aetiological surveys regarding the tail necrosis cases, in which most of them were reported independently. Suggested causes included selenium toxicosis, fly strike, ergotism ³, fescue toxicosis ⁴, tail-biting especially in veal calves ⁵, trauma ^{3,5} and Deg-Nala disease ⁶⁻⁸. Fly strike, ergotism and toxicosis were ruled out as the cause of tail necrosis in the present cases, based on anamnesis and physical examination. Tail biting was not associated with this condition, as it is usually common in calves. Trauma was most likely the cause of the condition in the present cases, as being informed by the owners and based on analysis of gross lesions. However it should be stressed that it the present survey etiological analyses were not performed due to lack of histopathology and possible microbiological and mycological results. Given the clinical cases of tail tip necrosis, diagnosis was made solely on the basis of clinical examination results and descriptive analysis of gross lesions. As a common entity of those cattle presented herein, were all independent and individual cases. Each of the cases were therefore classified as probably sporadic, because all of them were commonly representing the only cases among their population where they kept together with other animals. Thus although only limited infor-

mation was available about the real frequency of this disease among Ankara, it should be unwise to draw conclusions about the real prevalence of this condition in this area.

Especially Deg Nala disease, which is believed to be a mycotoxicosis, is characterised by development of oedema, necrosis and gangrene of the tail, legs, ears in cattle and buffaloes^{6,7,12}. The disease is in association with the rice straw feeding^{7,13,14}, and is believed to be induced by fungal infestation of straw¹³. Saprophytic fungi causing infestation of rice straw, produce mycotoxins resulting in vasoconstriction, therefore the lesions of the disease occurs¹⁵. In a previous study performed in Pakistan with Deg Nala disease most frequently isolated fungi species from rice straw were: *Aspergillus spp.*, *Alternaria spp.*, *Fusarium spp.*, *Mucor sp.*, *Cladosporium sp.* and *Penicillium sp.*⁷. In a later study gangrenous syndrome/Degnala disease was reported in buffaloes and cattle in West Bengal, India, in which *Fusarium spp.* was isolated from the mouldy paddy straw fed to the animals¹⁶. In the present study as being informed by the owners, the cattle were not fed rice straw, which is not included in cattle nutrition in this area. Thus microbiological analyses of the rations were lacking in the present study. To the present authors knowledge tail necrosis due to Deg Nala disease was not reported in Ankara, Turkey before. Therefore the real prevalence of the disease remains unclear, necessitating epidemiological and clinical studies.

In a previous discussing tail tip necrosis, the most commonly employed treatments for severely affected cattle as detected by mail survey questionnaire, were antibiotic administration or amputation of the affected area of the tail. To a lesser extend, there were also producers who slaughtered the cattle following observation of the lesions⁹. The question is that treatment options such as antibiotics or amputation may or not yield better economic returns in contrast to the immediate slaughter. In the authors practice and in that reported previously⁹, preventive measure should be undertaken when the cattle entered to a slatted floor barn, and alternatively amputation of the tail above the tip should be discussed with the responsible veterinary surgeons. Only in one case amputation was per-

formed in this study. In the rest of the cases treatment included IV antibiotic administration and topical antibacterial applications. In addition it should also be stressed that in cases with tail necrosis local application of the vasodilating agent, similarly in Deg Nala disease⁷, may be effective.

In advanced stages of the tail tip necrosis abscesses formation, purulent infiltration diffusing on to muscles, joints, scrotum, and lungs may be noticed¹⁷. In the present case series the cattle were otherwise healthy, and no other pathological condition resulting in economic loss or yield problems, were detected. This may be partly due to the early diagnosis. However as there were limited cases represented, conclusions should not be drawn from here, and it should always be kept in mind that the disease may cause considerably economic losses.

Based on the admittedly small sample size, gross lesions observed in the present survey were compatible with previous description⁹, analyzing that tail tip necrosis. The fully developed clinical signs such as tail tip alopecia and necrosis were accompanied by infection, circumscribed crust, suppuration, phlegmone with gross abscess formation and dermatocosmetic color changes in advanced stage of necrosis. However as the present survey provided no evidence and support of histopathological evaluation, diagnosis was based solely on analysis of the gross lesion and clinical examination. The survey covered a three year period because the present authors expected that the incidence of tail tip necrosis would not be high. Therefore data on incidence of tail tip necrosis must be considered even if subjective.

It has been commented that steers are much more susceptible in contrast to heifers⁹. However other reports found no difference between sexes with regard to tail tip necrosis^{10,11}. In addition tail tip necroses have been reported to affect beef cattle^{9,17}. In contrast in the present survey tail tip necrosis was detected both in dairy and beef cattle.

In conclusion tail tip necrosis may be an important problem both in slatted and solid floor types among dairy and beef cattle in Ankara,

Turkey. Given the clinical expression of the disease and analysis of gross lesions, this fact indicates the necessity of further studies with greater cattle populations to better understanding of the etiology of this disease and to confirm the histopathological findings, which will become the prior subject of our subsequent study.

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