Death rates in various categories of cattle transported to slaughterhouses

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Abstract

A total of 1 554 945 head of cattle were transported for slaughter in the Czech Republic from 2009 to 2014, of which 1 935 (0.124%) died from causes connected with transport. Mortality rates in cattle differed statistically highly significantly ($P < 0.01$) according to the individual categories of cattle. The greatest mortality rate associated with transport was found in calves (0.297%), followed by dairy cows (0.219%) and heifers (0.062%). The lowest mortality rate was found in fattened cattle (0.018%) and steers (0.000%).

Fattening, livestock, mortality, slaughter

Introduction

Transport stress has an impact both on the behaviour of animals and on the physiological and biochemical processes in their bodies. The action of stress factors may even lead to the death of the animal, either during the course of transport itself or immediately afterwards. Animal mortality is often the only indicator of the standard of welfare provided during transport in view of the fact that death during transport is generally the result of a serious violation of animal welfare during transport (Smulders and Algers 2009). The mortality rate in animals differs in dependence on the species and category of animals transported (Malena et al. 2007; Voslářová et al. 2007). Teke (2013) states a mortality rate for cattle during long transportation of 0.464%. Cernicchiaro et al. (2012) determined mortality in heifers amounting to as much as 1.3% during transport in the USA in the years 1997 to 2009. The mortality rate in cattle associated with transport to the slaughterhouse was monitored in the Czech Republic in the years 1997 to 2004. The mortality rate was 0.007% in fattened cattle (Malena et al. 2006), 0.038% in dairy cattle (Večerek et al. 2006a) and 0.026% in calves (Večerek et al. 2006b). Malena et al. (2007) compared the mortality rate in the individual categories of cattle associated with transport to the slaughterhouse in the period 1997 to 2006 and found the highest mortality rate in heifers (0.040%) and calves (0.027%) and the lowest in fattened cattle (0.007%).

The aim of this work was to determine the mortality rate in cattle during transport for slaughter in the Czech Republic in the years 2009 to 2014 and to judge changes in the mortality rate in individual years in the monitored period.

Materials and Methods

Data on the numbers of cattle transported for slaughter were obtained in co-operation with the State Veterinary Administration of the Czech Republic. During the period from 2009 to 2014, inspectors from the State Veterinary Administration of the Czech Republic recorded the numbers of cattle in the categories fattened cattle, dairy cattle, heifers, calves and steers transported for slaughter and the mortality in cattle associated with this transport

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separately for the individual categories, i.e. the numbers of animals either dying in the means of transport itself or dying at the slaughterhouse shortly after transport. These data were processed using the statistical software Unistat v. 6.5. (Unistat Ltd., GB). A comparison of the frequency of mortality between the individual categories was performed on the basis of a Chi Squared test during analysis of 2 x 2 contingency tables (Zar 1999).

Results and Discussion

Table 1. Number of animals in individual categories of cattle transported and dying in association with transport for slaughter in the years 2009 to 2014

Year	Fattening			Dairy cattle			Heifer			Calves			Steers		
	Transport*	Mortality*	Mortality [%]	Transport*	Mortality*	Mortality [%]	Transport*	Mortality*	Mortality [%]	Transport*	Mortality*	Mortality [%]	Transport*	Mortality*	Mortality [%]
2009	113 811	49	0.043	131 686	722	0.548	27 784	62	0.223	10 904	114	1.045	435	0	0.000
2010	114 323	15	0.013	123 501	336	0.272	27 199	4	0.015	10 807	16	0.148	487	0	0.000
2011	108 754	11	0.010	119 091	79	0.066	26 256	8	0.030	11 124	19	0.171	427	0	0.000
2012	93 607	19	0.020	116 190	263	0.226	25 598	14	0.055	10 366	19	0.183	399	0	0.000
2013	96 163	7	0.007	108 841	85	0.078	23 636	4	0.017	10 397	17	0.164	253	0	0.000
2014	104 938	10	0.010	104 424	53	0.051	22 020	2	0.009	11 154	7	0.063	370	0	0.000
Total	631 596	111	0.018	703 733	1 538	0.219	152 493	94	0.062	64 752	192	0.297	2,371	0	0.000
Average	105 266	19	0.017	117 289	256	0.207	25 416	16	0.058	10 792	32	0.296	395	0	0.000
Median	107 010	17	0.012	118 190	260	0.152	25 927	11	0.024	10 856	19	0.167	413	0	0.000
Minimum	93 607	7	0.007	104 424	53	0.051	22 020	2	0.009	10 366	7	0.063	253	0	0.000
Maximum	114 323	49	0.043	131 686	722	0.548	27 784	62	0.223	11 154	114	1.045	487	0	0.000

*Number of animals

The numbers of animals in the individual categories of cattle transported and dying in the individual years in the period monitored are given in Table 1. A total of 1 554 945 head of cattle were transported for slaughter in the Czech Republic in the years 2009 to 2014, of which 1 935 (0.124%) animals died in connection with this transport. The mortality rate differed statistically highly significantly ($P<0.01$) between the individual categories of cattle (Fig. 1). The highest mortality rate in connection with transport was found in calves (0.297%), followed by dairy cows (0.219%) and heifers (0.062%). In contrast, the lowest mortality rate was found in fattened cattle (0.018%) and steers (0.000%). A low level of mortality during transport was also found in fattened cattle in previous studies assessing mortality in cattle during transport for slaughter in the Czech Republic (Malena et al. 2006, 2007), along with a significantly higher mortality rate in dairy cattle and calves (Večerek et al. 2006a,b; Malena et al. 2007). This is evidently associated with the fact that dairy cattle and calves are usually culled from the herd when they show reduced performance, which frequently results from their poor state of health.

In combination with transport stress, this may then be a key factor leading to their death. The same conclusions have been reached by Gonzales et al. (2012) during the study of cattle transport in North America.

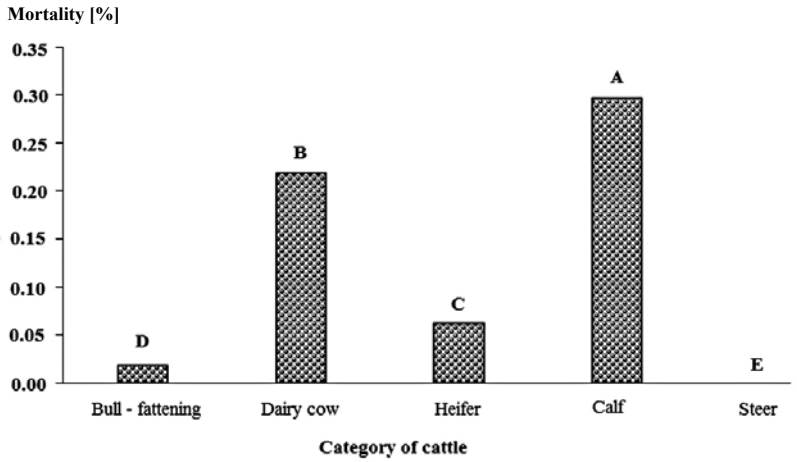

Fig. 1. Comparison of individual categories of cattle from the viewpoint of mortality associated with transport for slaughter in the years 2009 to 2014
[A-D] Mortality in categories of cattle without a common index show statistically significant differences ($P < 0.01$)

Our comparison of the death rate during the transport of cattle for slaughter in the Czech Republic in the period we studied and in the periods analysed in previous studies indicates a large increase in the number of deaths in the period 2009 to 2014. While Malena et al. (2006) state a mortality rate among fattened cattle during transport for slaughter in the period 1997 to 2004 of 0.007%, the figure for the period we studied of 2009 to 2014 was 0.018%. Similar results were produced by comparison of the mortality rate among dairy cattle: 0.038% in the period 1997 to 2004 (Večerek et al. 2006a) as compared with 0.219% during the period 2009 to 2014, and among calves: 0.026% during the period 1997 to 2004 (Večerek et al. 2006b) as compared with 0.297% during the period 2009 to 2014. A future study should consider the analysis of the factors that might be causing this increase.

Developments in the number of animals in the individual categories of cattle dying in connection with transport for slaughter in the years 2009 to 2014 are depicted in Fig. 2. A decline in the mortality rate in cattle was seen during the studied period, from 0.333% in 2009 to 0.030 % in 2014. The most pronounced fall was recorded in all categories of cattle (with the exception of steers, for which there was zero mortality throughout the studied period) between 2009 and 2010. In spite of this positive falling trend, the mortality rates seen in fattened cattle, dairy cows and calves throughout the whole period were higher than the corresponding mortality rates seen in these categories of cattle in the period 1997 to 2004.

Conclusions

Significant differences between mortality rates were found for individual categories of cattle. The highest mortality rate associated with transport was found in calves (0.297%), followed by dairy cows (0.219%) and heifers (0.062%). The lowest mortality rate was found in fattened cattle (0.018%) and steers (0.000%). There was an overall fall in

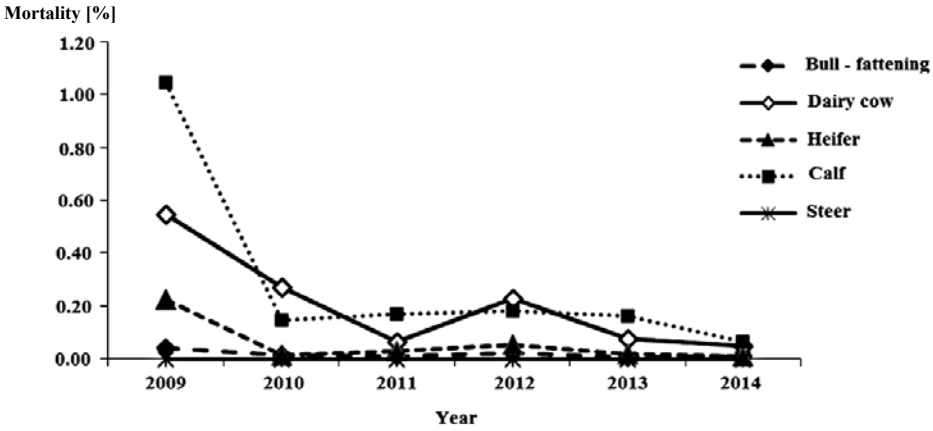

Fig. 2. Changes in the numbers of animals in individual categories of cattle dying in association with transport for slaughter in the years 2009 to 2014

mortality associated with transport during the studied period, though the mortality rate among fattened cattle, dairy cows and calves was higher throughout this period than the mortality rate seen in the same categories of cattle in the period 1997 to 2004. It would be desirable to focus further research on an analysis of transport conditions and factors that may be responsible for this increase.

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