

Emergency slaughters in pigs in the Czech Republic during the period of 1997–2002

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ABSTRACT: The aim of the present work was to determine the most frequent causes of emergency slaughters in pigs and the trends of future development. Records from emergency slaughters of pigs all over the Czech Republic were studied for the period of 1997–2002. The causes of emergency slaughters were divided into the following groups: infectious diseases, respiratory diseases, digestive diseases, musculoskeletal diseases, complications *post partum*, diseases of miscellaneous aetiology. The trends of future development were determined as an index equal to the ratio of relative occurrence of the findings during the period of 2000–2002 to the same figures from the period of 1997–1999. Musculoskeletal diseases were the most frequently found condition (42.39%) with stable figures in the long term (index 1.00). Neither any significant increase nor decrease in the occurrence of this type of diseases were found. Furthermore there was also high occurrence of the diseases of miscellaneous aetiology (29.51%), accounting in particular for the disease of the heart, liver and kidneys. There was a slightly increasing trend in this category of diseases (index 1.16), which was confirmed to be highly significant. The occurrence of respiratory diseases was also high (21.21%), showing the trend of slight decrease (index 0.88), which was nevertheless highly significant. The cases of emergency slaughter were reflected in the total number of condemnations in porcine carcasses (27.56%). This figure showed long-term increase (index 1.19), which was confirmed to be highly significant. It can be concluded that appropriate measures are necessary for the improvement of health status of pigs and reduction of numbers of emergency slaughters. Such measures should be in particular aimed at prevention of musculoskeletal diseases.

Keywords: emergency slaughters; findings at slaughterhouses; condemnation of carcasses; pigs; musculoskeletal diseases

Emergency slaughter is a slaughter of an animal intended for slaughter which is either sick, injured, or suspected of being sick. These animals are slaughtered either in slaughterhouses intended for this purpose, or in special departments of slaughterhouses intended for this purpose, or in premises commonly used for slaughter but slaughter is carried out separately with regard to time. Causes of emergency slaughters of pigs may serve as indicators of health status of pigs on farms and during transportation. Causes of emergency slaughters may serve as indicators of health status of pigs on farms and during transportation. Reasons to carry out emergency slaughter indicate the load

on different age groups of pigs on farm and during transportation and may be evaluated in order to propose changes necessary for improvement of health status in pigs. Causes of emergency slaughters are specified on the basis of findings during the inspection of meat and organs after slaughter. Kofler et al. (2001) emphasised the importance of evaluation of the findings obtained during meat inspection at slaughterhouses. Berns et al. (1997) also confirmed the importance of the data obtained from carcass inspection at slaughterhouses. The control activities consist of inspection, palpation, evaluation of cuts in carcasses and organs of slaughter animals and laboratory examinations of

tissue samples, swabs and impression smears. The aforementioned control activities result in the classification of carcasses as capable for human consumption (edible), capable for processing (conditionally edible) and condemned.

Kozak et al. (2003) dealt with slaughter of pigs in slaughter houses in the Czech Republic and analysed the findings of veterinary inspection of pig carcasses. They found that findings of non-infectious origin are more frequent (0.52%) than those of infectious origin (0.04%). Sensory changes in meat (0.33%) were the most common cause of meat non-edibility. Analogous findings were also reported in cattle (Vecerek et al., 2003a).

Kozak et al. (2002) studied the occurrence of edible, conditionally edible and condemned carcasses of slaughter animals. The authors reported a decrease in the occurrence of condemned porcine carcasses from 0.92% to 0.53% when comparing the periods of 1989–1994 and 1995–2000.

Vecerek et al. (2004) focused on the evaluation of organs from slaughtered pigs in slaughterhouses in the Czech Republic in order to express the level of risk for man. It was found that the highest frequency of findings was for the lungs from pigs (66.30% with regard to non-edibility). Analogously, the highest frequency of findings was found for the lungs from cattle (29.34% with regard to non-edibility) (Vecerek et al., 2003b).

Grest et al. (1997) analysed results from the inspection of pigs at six large slaughterhouses in Switzerland. As regards the findings in the lungs in a group of 8 921 slaughtered pigs, the most frequent cases were bronchopneumonia (21%) and diffuse pleuritis (21%). Schuh et al. (2000) studied findings in pigs slaughtered in Styria (Austria). Pneumonia was detected in 83.3%, pleuritis in 26.3%, pericarditis in 2.6% and milk spots in 47.5% of pigs. Kofer et al. (2001) studied findings in eight selected slaughterhouses in 1999 and 2000. Different stages of pneumonia were found in 43.7% of animals, chronic pleuritis in 22.7% and chronic pericarditis in 6.8%. Milk spots in the liver were detected in 45.6% of cases.

Szazados (1992) studied emergency slaughters in pigs, in particular the relations between insufficient bleeding during emergency slaughter at slaughterhouses and subsequent meat inspection classification results. Insufficient bleeding was caused by acute heart failure accompanying porcine stress syndrome and other conditions including pneumonia, pleuritis and pericarditis.

In the connection with emergency slaughter, Vecerek et al. (2003c) point out to the significant occurrence of musculoskeletal diseases which is the most common reason of emergency slaughter of bulls (58.27%), cows (35.30%) and heifers (43.07%).

The aim of the present work was to determine the most frequent causes of emergency slaughters in pigs and trends in their future development. Furthermore the impact of emergency slaughters on the decisions on condemnation of porcine carcasses was also evaluated. A long-term trend in the development of numbers of condemned porcine carcasses was identified. The results are important for the determination of measures for the improvement of health status on farms and during transportation of pigs with regard to emergency slaughters.

MATERIAL AND METHODS

Emergency slaughters of pigs at slaughterhouses during the period of 1997–2002 were studied and the causes of emergency slaughters were evaluated. Veterinary inspectors recorded the findings from emergency slaughters of pigs in the Czech Republic. The findings were divided into the following groups: infectious diseases, respiratory diseases, digestive diseases, musculoskeletal diseases, complications *post partum*, diseases of miscellaneous aetiology (especially diseases of the heart, liver and kidneys). Subsequently the decision of the official veterinarian on the classification of carcasses after emergency slaughter was recorded as follows: edible, conditionally edible and condemned.

Frequency of different causes of emergency slaughters and classification into the three groups were determined over the whole period of monitoring from 1997 to 2002. The values of relative frequency for different causes of emergency slaughters and classification into the three groups were calculated with regard to total number of emergency slaughters. The periods of 1997–1999 and 2000–2002 were evaluated separately in order to assess the trends in the development of causes of emergency slaughters. Both periods were compared by means of an index calculated as a ratio of relative frequencies in 2000–2002 versus 1997–1999. The index greater than 1.00 suggests an increasing trend in the occurrence of the respective cause of emergency slaughter or classification in the respective group based on the comparison of both aforementioned periods.

The index equal to 1.00 indicates that no increase in frequency of the respective cause of emergency slaughter or classification in the respective group occurred. In cases when the value of the index was calculated to be smaller than 1.00 a decreasing trend in relative frequencies for the respective cause of emergency slaughter or classification in the respective group was demonstrated in the comparison of the aforementioned periods. Statistical significance of increasing or decreasing trends was determined by statistical software Unistat (Unistat Statistical Package, Unistat Ltd.), using a module for the calculation of relative frequencies.

RESULTS

The Table 1 presents the causes of emergency slaughters and classification of carcasses after inspection. The figures show absolute and relative frequencies for the whole period of 1997–2002 and separately for periods of 1997–1999 and 2000–2002. In addition the trends in the long term are also presented in the form of indexes of increase or decrease of relative frequencies of different causes of emergency slaughters and classification of carcasses after inspection.

It can be concluded from the results that the most frequent cause of emergency slaughters in pigs were

musculoskeletal diseases (42.39%) with long-term stable trend (index 1.00). Neither a significant increase nor decrease in the frequency of this type of diseases was found. Another frequently found cause of emergency slaughter was the group of diseases of miscellaneous aetiology (29.51%) with a slightly increasing trend (index 1.16). The index of increase was highly significant ($P \leq 0.01$). Respiratory diseases ranked third (21.21%) with a slightly decreasing trend (index 0.88), which was again found highly significant ($P \leq 0.01$). Emergency slaughters accounted for considerable number of condemnations of porcine carcasses (27.56%) with increasing trend in the long term (index 1.19). The trend was confirmed as highly significant ($P \leq 0.01$).

DISCUSSION

Causes of emergency slaughters in pigs indicate the types of load to which pigs are exposed on farms and during transport. These factors lead to health disorders and ultimately to emergency slaughters. Different causes influence the decision on carcass classification after slaughter of the animals. Numbers of condemned porcine carcasses indicate the importance of this load to pigs. On the basis of determination of the nature of the load and of the trends in development based on large

Table 1. Causes of emergency slaughters in pigs and trends in their development

Causes of emergency slaughters	1997–2002		First period 1997–1999		Second period 2000–2002		Trend B/A index	Significance P
	frequency	%	frequency	A (%)	frequency	B (%)		
Infectious diseases	1 895	0.34	1 620	0.59	275	0.10	0.17	**0.00
Respiratory diseases	116 511	21.21	61 984	22.61	54 527	19.81	0.88	**0.00
Digestive system diseases	24 489	4.46	12 793	4.67	11 696	4.25	0.91	**0.00
Circulatory diseases	232 866	42.39	115 949	42.30	116 917	42.48	1.00	0.17
Complications <i>post partum</i>	11 454	2.09	6 864	2.50	4 590	1.67	0.67	**0.00
Miscellaneous aetiology	162 135	29.51	74 922	27.33	87 213	31.69	1.16	**0.00
Total	549 350	100.00	274 132	100.0	275 218	100.0	1.00	
Condemned	151 414	27.56	69 099	25.21	82 315	29.91	1.19	**0.00
Conditionally edible	351 171	63.92	182 379	66.53	168 792	61.33	0.92	**0.00
Edible	46 729	8.51	22 654	8.26	24 075	8.75	1.06	**0.00

**a highly significant difference was found between the first and the second period ($P \leq 0.01$)

numbers of observations during a sufficiently long period it can be concluded which measures on pig farms would lead to improved health status and decreased load. If the measures are successfully applied, the numbers of condemned porcine carcasses after emergency slaughter may be reduced.

We found that the most frequent causes of emergency slaughters in pigs were musculoskeletal diseases. This finding corresponds to a general conclusion drawn for findings in slaughterhouses published by Kozak et al. (2003) who reported that in the case of regular slaughter of pigs the findings of non-infectious origin are more frequent than those of infectious origin. Similar findings were also reported in cattle by Vecerek et al. (2003c) who found out that the most frequent causes of emergency slaughters are musculoskeletal diseases and who also found out that in the case of regular slaughter of cattle the findings of non-infectious origin are more frequent than those of infectious origin (Vecerek et al., 2003a). We have found that the occurrence of musculoskeletal diseases does not show a decreasing trend which is a rather discouraging result as it suggests long-term unfavourable conditions in housing technology and transport with regard to the load to the musculoskeletal system of pigs.

We found that the frequent causes of emergency slaughters in pigs were diseases of miscellaneous aetiology (in particular heart failure, liver and kidney diseases) and respiratory diseases. The results were similarly in accordance with the findings by other authors. Schuh et al. (2000) and Kofer et al. (2001) detected an important proportion of cases of pneumonia, pleuritis, pericarditis and milk spots in the liver. Grest et al. (1997) reported a high proportion of bronchopneumonia and diffuse pleuritis. When evaluating the organs of slaughtered pigs in common slaughterhouses, Vecerek et al. (2004) also found the highest frequency of findings in the lungs of pigs which is analogous to that in cattle (Vecerek et al., 2003b). These results corresponded to the findings published by Szazados (1992) in emergency slaughters of pigs. The causes of insufficient bleeding presented by this author were heart insufficiency as well as other conditions like pneumonia, pleuritis and pericarditis. The long-term increasing trend in the diseases of miscellaneous aetiology was a negative finding which indicated increasing load to pigs on farms and during the transport, in particular with regard to the circulatory system, liver and kidneys of pigs. On the other

hand there was also a positive finding of decreasing trend in the occurrence of respiratory diseases in pigs at emergency slaughter.

Numbers of condemned carcasses of pigs after emergency slaughters was high. In the long term the trend was not developing favourably. There was however an opposite trend found for emergency slaughters compared to the data obtained by Kozak et al. (2002) from regular slaughterhouses. This can be explained by general improvement of health status of the animals at pig farms. Therefore the numbers of condemned porcine carcasses at regular slaughterhouses was decreasing. On the other hand, in cases of individual pigs that suffered from a disease or injury which subsequently led to the decision on emergency slaughter, the steps were usually not taken in time and therefore the course of the disease did not allow anything else but to condemn the porcine carcass.

In general the results demonstrated that the technology of pig farming and the transport of pigs produced a long-term load to pigs, which was manifested by musculoskeletal diseases, respiratory diseases and diseases miscellaneous aetiology. The trend of occurrence of respiratory diseases was found decreasing. No decreasing trends, however, were found in the occurrence of musculoskeletal diseases and diseases of miscellaneous aetiology as causes of emergency slaughters in pigs. These groups of diseases had impact on condemnation of porcine carcasses at emergency slaughter. As regards the changes, which are necessary for pig farms and the transportation in order to improve health status in pigs, it is necessary to implement measures focused especially on limitation of musculoskeletal diseases.

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