

Prevalence of carcass defects in sows at harvest.

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Abstract

The objective of this study was to determine the prevalence of defects on sow carcasses at harvest. The study design was a cross-sectional survey of carcass defects detected during harvest at commercial sow processing plants. Three plants were visited. Chi-square analysis was used to compare the prevalence and anatomical location of lesions between plants. A total of 3200 sow carcasses were visually observed for presence and location of defects. Of all sow carcasses, 84.9% had no lesions, 11.2% had a neck lesion, 2.7% had a lesion on the hip, 0.3% ham, 0.6% perivulvar, 0.06% loin, 0.6% shoulder, and 0.5% of sow carcasses had 2 lesions. There was a significant difference in prevalence of lesions between plants. For the presence of any lesion the prevalence was 11.1%, 24.2% and 7.6% for plants B, D, and E respectively ($\chi^2_{df=2}$, $p<0.001$). The plants differed in the prevalence of lesions at different locations on the carcasses. The prevalence of neck lesions was 6.1%, 21% and 4.3% for B, D and E respectively ($\chi^2_{df=2}$, $p<0.001$). The prevalence of hip lesions was 3.7%, 1.8% and 2.4% for B, D and E respectively ($\chi^2_{df=2}$, $p<0.05$). The prevalence of lesions in the perivulvar, ham and shoulder regions were also different between plants ($\chi^2_{df=2}$, $p<0.05$). These data suggest that there is a large proportion of sow carcasses with lesions associated with injection sites. Additionally it appears that there are plant specific (likely farm specific) associations with lesion prevalence and anatomical location. These data suggest that further investigation into injection technology and practices in sows may be warranted to decrease the risk of carcass defects and physical hazards.

Introduction

Appropriate methods for injection are well recognized as important for pork quality and safety, and represent a critical component of the Good Production Practices in the US National Pork Board (NPB) Pork Quality Assurance Plus program (PQA Plus). Appropriate injection methods decrease the risk for physical hazards and the potential of residues due to improper administration.

Under PQA Plus guidelines, intramuscular injections are to be given in the neck, regardless of the production phase. Recently, the Canadian Quality Assurance (CQA) program approved the hip as an acceptable anatomical location for intramuscular injections in sows only. This has potential advantages for occupational health of pork producers, decreasing the risk of injury while giving injections, particularly to sows in crates. Concerns remain regarding the risk of carcass defects associated with this anatomical location in sow carcasses, as it is a muscle tissue of critical value. Another critical issue is the paucity of peer-reviewed data on the frequency and characterization of carcass defects in sow carcasses, as the Pork Quality Audit¹ addressed finisher pigs only.

Carcass defects represent not only a pork safety concern, but an economical cost to processors. Some of these concerns were outlined in the 1994 Pork Chain Quality Audit. According to this audit major economic losses are due to carcass defects. Almost \$1.5 million was lost the year the audit was conducted due to abscess or injection-site blemishes at the time of slaughter. Abscesses were the second most common cause of condemnation and carcass trimming at slaughter plants¹.

Despite educational efforts and economic costs, carcass defects and physical hazards remain a major economic and food safety concern for the pork chain. Emergence of new technologies and increasing

concerns regarding employee injuries associated with injections have increased the interest in understanding implications of injection methodologies and addressing carcass defects at slaughter. There is a lack of descriptive epidemiological data on injection methods used in pork production as well as data on prevalence and character of carcass defects in both sow carcasses. These basic epidemiologic data are the critical first step in understanding risk factors associated with carcass defects, as well as providing producers with information regarding selection of injection technologies.

Materials and Methods

The study design was a cross-sectional survey of carcass defects detected during harvest at commercial processing plants. Between July 2008 and March 2009, 1 plant was visited 3 times and 2 plants were visited 2 times (total of 8 sample periods). During each observation, 400 carcasses were observed (N=3200). Observation focused on identifying carcass lesions in areas of potential injection (neck, hip, shoulder, perivulvar, ham, other). One observer conducted all observations. Chi-square analysis was used to compare the prevalence and locations of lesions between plant locations.

Results

Of all sow carcasses (N=3200), 84.9% had no lesions, 11.2% had a neck lesion, 2.7% had a lesion on the hip, 0.3% on the ham, 0.6% in the perivulvar region, 0.06% on the loin, 0.6% on the shoulder, and 0.5% of sow carcasses had 2 lesions. Two sows had jowl lesions. There was a significant difference in prevalence of lesions between plants (Figure 1). For the presence of any lesion the prevalence was 11.1%, 24.2% and 7.6% for plants B, D, and E respectively ($\chi^2_{df=2}$, $p<0.001$). The plants differed in the prevalence of lesions at different locations on the carcasses. The prevalence of neck lesions was 6.1%, 21% and 4.3% for B, D and E respectively ($\chi^2_{df=2}$, $p<0.001$). The prevalence of hip lesions was 3.7%, 1.8% and 2.4% for B, D and E respectively ($\chi^2_{df=2}$, $p<0.05$). The prevalence of lesions in the perivulvar, ham and shoulder regions were also different between plants ($\chi^2_{df=2}$, $p<0.05$).

Discussion

To the best of our knowledge, this is the first report of the proportion of carcass defects associated with injection locations in cull sows. These data suggest that there is a large proportion of sow carcasses with lesions associated with injection sites. It is likely that the proportion of carcass defects is under-represented since only surface-level defects could be detected. Additionally, there are plant specific associations with lesion prevalence and anatomical location. Although this may be a function of purchasing criteria of different processors, it also suggests that there may be farm-level differences in injection technology and injection site locations. This suggests that interventions at the farm level in injection methods and technologies may decrease the risk of carcass defects, physical hazards, and the potential for pharmacological residues. Further investigation into injection technology and location of injection in sows and the association with carcass defects and physical hazards (as well as economic impact to the pork value chain) is warranted.

Conclusions

- This is the first report of the proportion of carcass defects in cull sow carcasses.
- Sows have a high rate of injection-site associated carcass defects.
- Further research into the association between injection technology and practice and the risk of physical hazards and carcass defects is warranted.

References

1. MEEKER, D. AND SONKA, S., 1993. Pork Chain Quality Audit – Progress Report. Des Moines, IA, USA. National Pork Board and National Pork Producers Council.

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Figure 1. Proportion of carcass lesions identified on sow carcasses at harvest by location and plant.

