

# The apparent prevalence of skin lesions suspected to be human-inflicted in Danish finishing pigs at slaughter

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## ABSTRACT

Skin lesions on pigs inflicted by humans compromise animal welfare and are the subject of increased public and political attention in Denmark. Systematic surveillance of such skin lesions was enforced in April 2010 at all Danish pig abattoirs, through the recording of meat inspection Code 904 for the presence of skin lesions suspected to be human inflicted. The objectives of the present study were to (a) estimate the apparent prevalence of Code 904s at the pig and herd owner level; (b) characterise the distribution of deliveries with pigs demonstrating a Code 904; (c) characterise the distribution of herd owners with repeated Code 904 recordings; and (d) determine the developments in Code 904 prevalence over time in Danish finishing pigs in the period from May 1, 2010 to September 30, 2013.

Data from the 12 largest finishing pig abattoirs from Denmark were included and recordings were comprised from 65,504,021 pigs from 651,681 deliveries originating from 10,796 herd owners.

Overall, 7200 (0.011%) of the pigs were recorded with a Code 904, and 21% of herd owners had a minimum of one Code 904 delivery with at least one pig with skin lesions inflicted by humans. On the pig-level, the apparent prevalence was 0.020% in 2010, which was reduced to 0.008% in 2013. In the first quarter of the study period, 17% of the herd owners had a Code 904 delivery, while 7% had one in the last quarter. Nine per cent of the herds had more than one Code 904 recording, with up to 16 Code 904 deliveries from one herd owner. Most deliveries included one single pig with a Code 904, but up to 102 Code 904 recordings were made in a single delivery. The apparent prevalence at the four smallest and four middle sized abattoirs decreased from the first to the second quarter, while the apparent prevalence decreased more substantially in the largest four abattoirs; with significant decreases from both the first to the second, and from the second to the third quarter.

The study showed that recorded skin lesions suspected to be inflicted by humans are prevalent, but the apparent prevalence decreased from 2010 to 2012 and 2013. The development in Code 904 over time could be due to a real decrease or be due to other factors such as changes in the way the lesions were recorded, while both underestimation and overestimation appeared to be present.

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## 1. Introduction

Skin lesions inflicted by humans on pigs sent for slaughter are considered to cause unnecessary pain and consequently affect the welfare of the pigs. Violence-related

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**Table 1**

Summary of cases<sup>a</sup> including bruises inflicted by humans and excessive use of a tattoo hammer from the animal welfare reports on the Danish Veterinary and Food Administration from 2008 to 2012 (DVFA, 2010, 2011, 2012, 2013).

Year	Type of sanction	Bruises	Excessive use of tattoo hammer	Bruises and excessive use of tattoo hammer	Year total
2008	Warning	16	30	NR	100
	Police report	39	15	NR	
2009	Warning	7	32	NR	74
	Police report	24	11	NR	
2010	Warning	53	42	1	153
	Police report	45	11	1	
2011 <sup>b</sup>	Warning	47	58	4	180
	Police report	51	15	5	
2012	Warning	27	27	1	105
	Police report	42	6	2	

NR: not reported.

<sup>a</sup> A case is usually a delivery of animal, i.e. the number of animals in a case can vary.

<sup>b</sup> In 2011, reported categories also included slap marks combined with other injuries and excessive use of a tattoo hammer combined with other injuries. These categories have been included in the numbers summarised here.

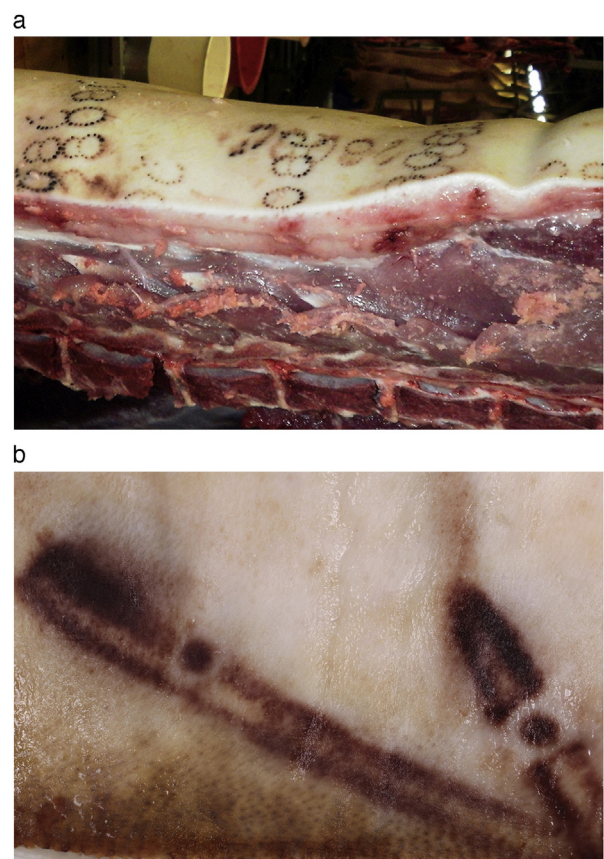
cases are illegal in Denmark, according to the Animal Protection Act (Anon, 2013a). An increase in the number of forensic cases of bruises on pigs was observed in 2008 at the Department of Veterinary Disease Biology, University of Copenhagen (Barington and Jensen, 2013). These data are part of the welfare recordings consisting of data with cases of bruises and penetrating lesions caused by excessive use of tattoo hammers, which are published annually by the Danish Veterinary and Food Administration (DVFA) and summarised in Table 1 (DVFA, 2010, 2011, 2012, 2013).

Few published studies have reported on the prevalence of skin lesions, and their primary focus was on meat quality rather than animal welfare. A European study reported 63% of 5484 pig carcasses with skin blemishes, of which 10% were categorised as moderate to severe (Warriss et al., 1998). Skin damage was reported in 90% of 15,695 pig carcasses in Spain, with 74%, 15%, and 1.5% being categorised as moderately damaged, very damaged or severely damaged, respectively (Gispert et al., 2000). In a Brazilian study including 2660 gilts, 83% of pigs were observed with skin damage at slaughter (dalla Costa et al., 2007). These studies represented all skin lesions, with lesions caused by fighting amongst pigs reported as the main cause. The prevalence of human-inflicted skin lesions in a nationwide survey has to our knowledge not previously been described.

Violence-related skin lesions can be divided into bruises caused by blunt trauma and skin penetrating lesions due to excessive use of tattoo hammers (Fig. 1a and b). A bruise is defined as an accumulation of extravascular erythrocytes in the subcutis beneath an intact epidermis and is usually caused by a blunt trauma (Barington and Jensen, 2013). In addition, blunt trauma can cause a haemorrhage in the underlying muscle tissue, hence emphasising the severity of the welfare problem. Tattoos are a common means of pig identification, e.g. used for payment to the farmer, and for traceability for disease control purposes. Danish slaughter pigs are allowed to be marked once on each hind quarter before leaving the farm to ensure correct identification of the carcass. More than two tattoos are considered to cause unnecessary pain to the pig (Anon, 2009). Bruises caused by blunt trauma and penetrating lesions due to excessive use

of the tattoo hammer or other devices will in the following collectively be referred to as suspected human-inflicted skin lesions.

The apparent increase in forensic cases of bruises combined with an increased focus on animal welfare in the



**Fig. 1.** (a) Skin of a finishing pig with lesions due to excessive use of a tattoo hammer. Notice the haemorrhage in the subcutaneous fat tissue. (b) Skin of a finishing pig with bruises due to blunt trauma inflicted by humans.

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