

Prevalence of Fibrinous Pericarditis at slaughter inspection on heavy pigs (170 kg)

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Introduction

Fibrinous pericarditis has been detected with different prevalences at post-mortem inspection. Although it's not a specific food safety problem, it affects animal health leading to cardiac dysfunction, with possible negative implications for the production. Many pathogens or circulatory alterations can directly or indirectly cause fibrinous pericarditis. The objective of this study was to assess the prevalence of this lesion at slaughter on pigs reared to 170 kg, verifying the association with pleurisy and pneumonia lesions.

Figure 1: Fibrinous pericarditis detected at slaughterhouse. Fibrinous adhesions are visible between pericardium and epicardium.



Materials & Methods

In one year 658 pig batches from 236 farms located in the North of Italy were visually scored during slaughter procedures for presence of fibrinous pericarditis. Pleurisy and pneumonia lesions were scored using the grids respectively developed by Dottori et al. (2007) and Madec and Derrien (1981). A total of 58'099 plucks was individually recorded on the dataset. Data were processed using a linear model that considered the effect of slaughtering season, and the farm of origin as random effect. A Spearman correlation analysis was performed considering pericarditis, pneumonia and pleurisy.

Table 1: Frequency distribution of the examined plucks, grouped for presence or absence of pericarditis and for the respective pleurisy score.

		Pleurisy score					
		0	1	2	3	4	Total
No pericarditis	Plucks (N)	37399	4537	7719	4371	788	54814
	% of all plucks	64,37	7,81	13,29	7,52	1,36	94,33
	Plucks (%) of those without pericarditis	68,23	8,28	14,08	7,97	1,44	
Pericarditis	Plucks (N)	872	323	480	649	961	3285
	% of all plucks	1,5	0,56	0,83	1,12	1,65	5,67
	Plucks (%) of those with pericarditis	26,54	9,83	14,61	19,76	29,25	
Plucks (N total)		38271	4860	8199	5020	1749	58099

References

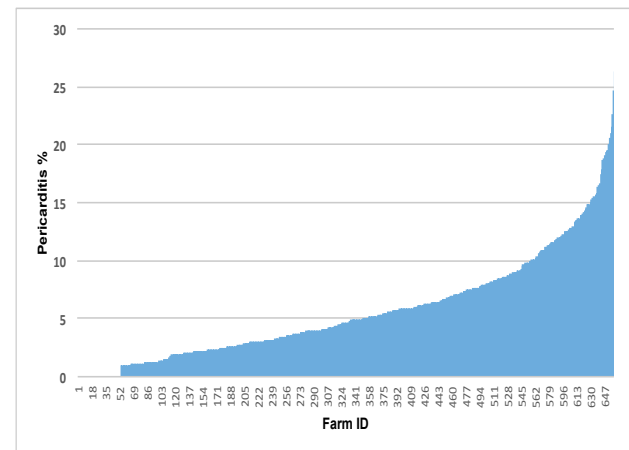
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Results

An annual mean of 5.67% of plucks with fibrinous pericarditis was recorded, with a maximum per batch of 26.32%. No seasonal variability was found for pericarditis, while for other pluck lesions a seasonal variation was demonstrated as previously reported (Scollo et al., 2017). Farm of origin as random effect accounted for 38.44% of variation between batches.

While no correlation was found between pericarditis and pneumonia lesions, a positive correlation at batch level ($r^2 = 0.59$; $P < 0.001$) was found with the most severe stage of pleurisy. This is shown also in the frequency association at pluck level, since half of the plucks with pericarditis (49.01%) had severe pleurisy (score 3 and 4) (Table 1).

Figure 2: Farm distribution according to the prevalence of pericarditis.



Discussion & Conclusions

Previous large-scale surveys on pig disease lesions at slaughter showed a variable frequency of pericarditis: 4.3% (Flesja and Ulvesaeter, 1979); 4.6% (Madec and Kobish, 1982); 7.7% (Sanker et al., 1982); 13% (Buttenschoen, 1991); 5.6% (Mousing et al., 1995); 9% (Bonde et al, 2010); 2.3% (Mathur et al., 2018). The annual mean of 5.99% of plucks with fibrinous pericarditis recorded in this study doesn't suggest a higher risk of detecting fibrinous pericarditis at slaughter for heavy pigs if compared to previous studies on lighter productions, suggesting that this chronic fibrinous lesion has an early onset in the pig life cycle. Despite this relative low mean value, extreme situations can however occur since the maximum value recorded per batch was 26.32% (Fig. 2).

The lack of seasonal influence and the relative high variability among farms suggest that animal and farm related variables play a major role in determining pericarditis prevalence. The presence of deserving farms with around 0% of scored plucks with pericarditis, further suggests that improvement of management and biosecurity practices could significantly reduce the prevalence of pericarditis (and other pluck lesions).

The strong association with severe stages of pleurisy suggests that pathogens capable of causing this lesion may also lead to primary or secondary pericarditis. The lack of correlation with pneumonia lesions questions previous results reporting *M. Hyopneumoniae* as a frequent isolated bacterium from pericardium (Buttenschoen et al., 1997). Further microbiological assays are therefore needed to clarify any bacterial responsibility, although the early onset of this lesion along pig productive cycle could be a problem in detecting these pathogens at slaughter.