Validation of a scoring system for footpad dermatitis in broiler chickens

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Measuring the severity of footpad dermatitis, as an important indicator of animal welfare in poultry industry, is an accepted tool monitoring the quality of animal husbandry. Different scoring schemes are used, most of them based on a visual evaluation. A standardization of the existing systems could be beneficial, not only to compare different studies, but to provide an objective tool in poultry welfare surveillance. In this study we present a validation of a visual scoring system, widely used in German production systems, adding information of histological parameters. Therefore, feet of broiler chicken (ROSS 308) were scored at the abattoir (4-point scale: 0; 1; 2a; 2b). Ten feet per score class (n=40) were sampled and analysed macroscopically and microscopically, measuring size and depth of the lesions and thickness of the different cutaneous layers. For a classification of these histological parameters, a cluster analysis was performed. Using the glimmix procedure in SAS, visual and histological classification were found to differ significantly (F=5.49; P<0.05). Furthermore, using the Kendall tau correlation coefficient, a positive correlation of the size of a lesion with the depth of the ulcer was found. In conclusion, in this study we showed that the size of the lesion might be a good indicator of the depth. Whereas histological findings coincided well with the less severe visual scores (0; 1), the differentiation between the severe scores (2a; 2b) seemed to be less valid. We therefore recommend keeping visual scoring systems as simple as possible, referring to the size of the lesions as indirect parameter for the depth.