

# Classification scheme for acute/chronic vertebral osteomyelitis to be applied during post-mortem inspection of swine carcasses – a suggestion

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Risiken erkennen – Gesundheit schützen

### **VERTEBRAL OSTEOMYELITIS (VO)**

• Vertebral Osteomyelitis (VO), is the main cause of condemnation of slaughtered finishing pigs in Portugal.

- Inflammation of the vertebrae bone with involvement of medulla
- **Suppurative** and disfiguring process characterized by necrosis and **removal** of bone ...
- Compensatory production of **new bone**, **circunscribing** the lesion ... over a prolonged period (Doige and Weisbrode, 2001)







- During meat inspection, it is of major relevance to classify a lesion into acute or chronic in order to properly evaluate if meat can be declared fit or unfit for human consumption (Ninios 2014, Collins and Huey, 2015 and Jensen *et al.*, 2017), being **acute cases** more related to generalised disease, like **septicemia** 
  - EU meat inspection legislation (EU Implementing Regulation (EU) 2019/627 )



#### PORTUGAL

• Due to the lack of objective criteria for VO judgment during post-mortem inspection, and the perceived risk that VO are related to septicaemia, most of VO cases are totally condemned in an undifferentiated way.

### **OBJECTIVE**



• To establish a **classification scheme** to differentiate between acute and chronic VO using macroscopic characteristics (seen during post-mortem inspection) and validate it based with histopathological analyses (Gold standard method)



#### **MATERIAL AND METHODS – 40 VO cases**

- MACROSCOPIC Classification, based on the following objective macroscopic characteristics
  - Acute: Shiny and moist with, sometimes, congested areas. Evident bone destruction not circumscribed by adjacent remodelling tissue; presence of fluid purulent exudate;
  - **Chronic**: Moderate bone destruction circumscribed by remodelling tissue; thickened exudate. No evidence of congested areas
- HISTOPATHOLOGICAL analyses (golden standard), validate macroscopic classification
- Kappa test Interrater agreement between macroscopic and histopathological VO classification

#### **MATERIAL AND METHODS – 40 VO cases**

• MACROSCOPIC Classification, based on the following objective macroscopic characteristics



Acute: Shiny and moist with, sometimes, congested areas (→); Evident bone destruction not circumscribed by adjacent remodelling tissue; presence of fluid purulent exudate;



**Chronic**: Moderate bone destruction **circumscribed by remodelling tissue (→)**; thickened exudate. <u>No evidence of</u> congested areas

#### RESULTS

- Macroscopic classification: 20 Acute / 20 Chronic
- Histopathological analyses: 18 Acute / 22 Chronic
- Macroscopic classification presented a **substantial agreement** (Cohen's kappa coefficient ( $\kappa$ ) = **0.80**) with histopathological classification (Gold standard method)

	Histopathology classification		Total
Macroscopic classification	Acute	Chronic	
Acute	17	3	20
Chronic	1	19	20
Total	18	22	40





#### **CONCLUSIONS**

- Indicate Acute/Chronic Macroscopic Classification Scheme as a reliable post-mortem inspection tool
- First science-based VO classification scheme can contribute to **harmonize** the classification of VO and meat inspection decisions in Portuguese abattoirs.
- Extreme importance in Portugal since VO it is the main cause of condemnation of finishing pigs at slaughterhouse (0.1% of the slaughtered pigs)
  - Representing an important economic issue to pork industry



## Thanks for all your attention

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