



Performance of Gross Lesions at post-mortem for detection of high-pathogenic Avian Influenza (HPAI) subtype H7N7 outbreaks in the Netherlands in 2003

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Introduction

- Rapid identification of List-A disease of paramount importance.
- EU control strategy: stamping-out & veterinary and zoo-sanitary measures.
- Post-mortem examination (PME) can be crucial element in early-warning system (EWS).



source: Agrarisch Dagblad

Material & Methods

- Serious suspicion: 5 dead birds from each flock submitted for PME / collection of organs for virus isolation.
- 86 infected and 37 non-infected submissions investigated.
- PME by one veterinary poultry specialist.



source: Animal Health Service

- Sensitivity (Se) and Specificity (Sp) of gross lesions for detection of outbreak was determined.
- Overall performance of Gross Lesions established by Receiver Operating Characteristic (ROC) curve.
- Optimal specific, sensitive and efficient cut-off levels determined.

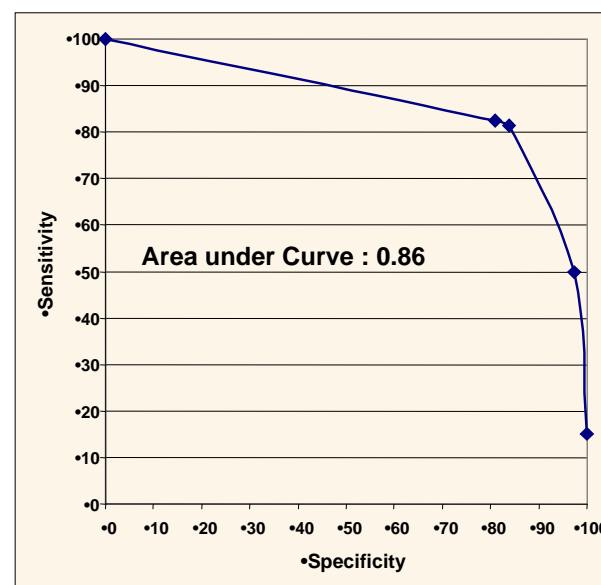
Discussion

- If PME is fixed part of AI diagnosis, 20% false negative PME results will postpone HPAI diagnosis.
- If excessive mortality suggests possibility of HPAI, pathologist should decide on use AI labtest even if necropsy gives no specific indication for HPAI.
- In case of HPAI, there may be no prominent lesions because birds die very quickly.
- Lesions in our study did not fully comply with literature (lack of hemorrhagic changes in tissue & low prevalence of edema in neck/wattles).

Results

Distribution of Gross Lesions in groups of birds (n=5) submitted for PME on the basis of HPAI suspicion.

Gross lesions	Se (%)	Sp (%)
Peritonitis	61.6	86.5
Egg peritonitis	0	89.2
Tracheitis	43.0	97.3
Edema neck/ wattles	11.6	100
Bleedings proventriculus	3.5	100
Acute pneumonia	2.3	97.3
Acute airsaculitis	1.2	94.6
Osteoporosis	1.2	100
Acute Hepatitis	1.2	89.2
Sinistitis	0	97.3



ROC-curve of combinations of gross lesions for detection of HPAI outbreaks.

- **Optimal specific test** (Se: 15%, Sp: 100%) : Edema of neck/wattles or hemorrhages in proventriculus or osteoporosis.
- **Optimal sensitive test** (Se: 83%, Sp: 81%) : Edema of neck/wattles or hemorrhages in proventriculus or osteoporosis or Tracheitis or Peritonitis or acute Pneumonia.
- **Optimal efficient test**: (Se: 81%, Sp: 84%) : Edema of neck/wattles or hemorrhages in proventriculus or osteoporosis or Tracheitis or Peritonitis.

Conclusions

- Gross Lesions have high test performance for HPAI detection, but not as optimal as we wish!
- These Gross Lesions in combination with acute and high mortality seen in flocks should result in action to exclude HPAI in differential diagnosis by testing tissue samples by virus isolation or PCR.

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