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CORRELATION BETWEEN CYTOLOGIC AND MICROBIAL RESPIRATORY PROFILES AND PERFORMANCE IN FRENCH TROTTERS

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Objective: Investigate a possible association between cytological, mycological and bacteriological profiles of the respiratory tract of racehorses and the level of performance

Materials and methods:

Standardbred racehorses

Modified performance scoring

(out of 4 based on the podiums ratio, earnings, national index and ranking)

Good performers

Poor performers

Clinical evaluation

Bilateral Broncho-Alveolar Lavage « BAL »

Tracheal Wash « TW »

Bilateral Guttural Pouch Lavage « GPL »

- Cytodiagnosis consistent with moderate Equine Asthma « mEA »: *neutrophils > 5%, eosinophils > 1% or mast cells > 2% in BAL*¹
- Cytodiagnosis consistent with Exercise-Induced Pulmonary Hemorrhage « EIPH »: *hemosiderophages/macrophages ratio > 20% in BAL*²

- Fungal element: *Cytology + mycology on TW & BAL*
- Cytodiagnosis consistent with Tracheal Inflammation Syndrome « TIS »: *neutrophils > 20% in TW*³
- Mycoplasma: *PCR on TW*
- Bacteria: *Bacteriology on TW*

Results & Discussion:

Statistical analysis: Mann-Whitney or Chi-square test (P-value < 0,05)

GOOD PERFORMERS

12

Homogeneous: gender, age, living environment

20

POOR PERFORMERS

Higher prevalence of:

- mEA (cytodiagnosis)
- EIPH (cytodiagnosis)

Statistically significant difference (p-value = 0,041)

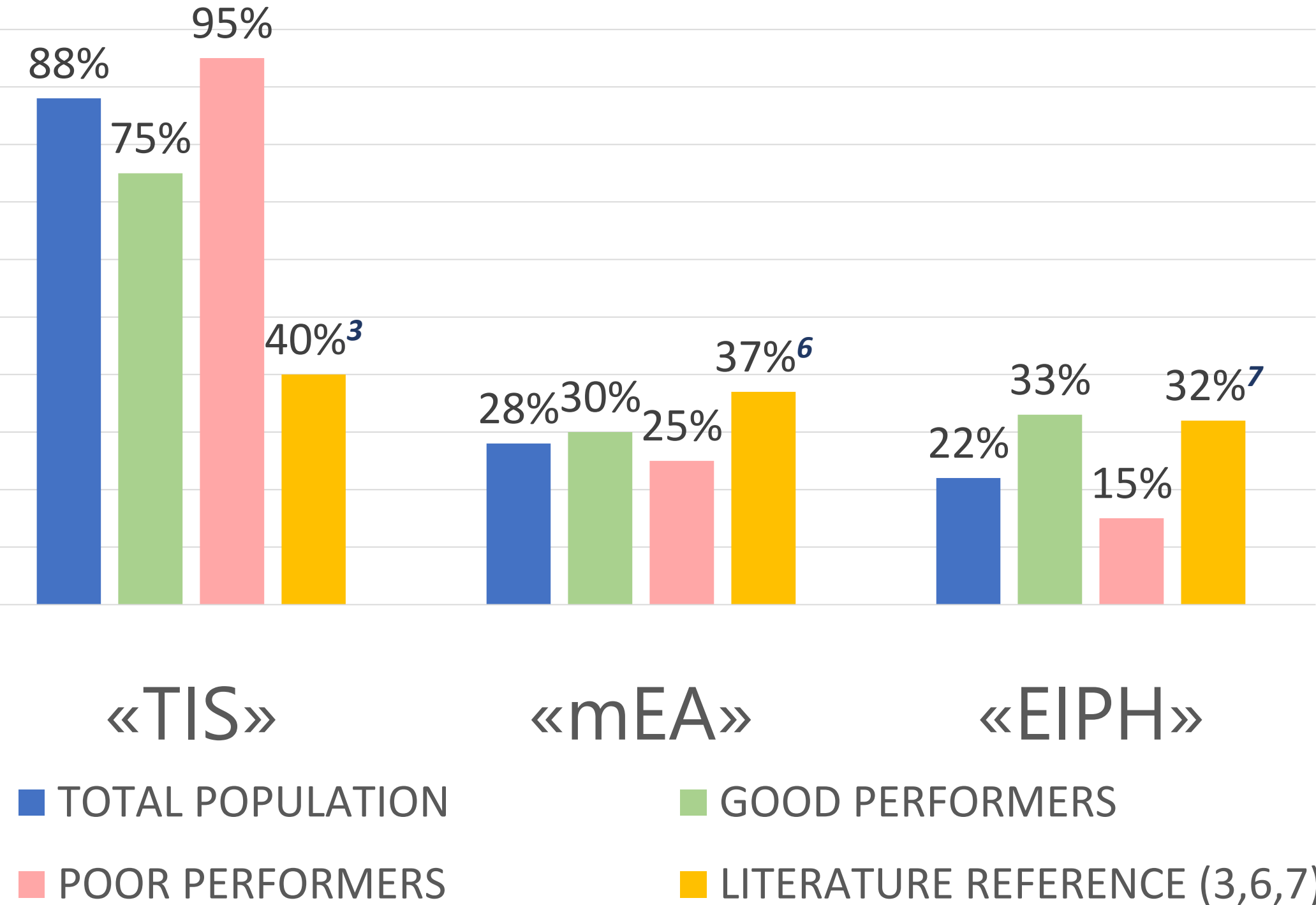
No statistically significant difference

Higher prevalence of:

- Higher respiratory rate
- Abnormal respiratory auscultation
- TIS (cytodiagnosis)
- Bacteria (including mycoplasma) in the TW

Crispe et al (2017)⁴: a low-grade EIPH would not decrease performance. It would be a sign of a more intense exercise.
Morley et al (2015)⁵: a non-EIPH horse would be >2 times more likely to win races.

FIG1 : PREVALENCE OF THE MOST COMMON RESPIRATORY CONDITIONS ACCORDING TO PERFORMANCE LEVEL



- *Fungal colonization of the airways was not associated with poor performance.*
- *BAL seems to be more specific than TW⁸: Mycology (+) on BAL pool = 9% Mycology (+) on TW = 96%*

⁸ Lemonnier, L.C. et al (2022) - Variability of fungi detection in the respiratory tract of racehorses according to the sampling site (ICEEP, Sweden)

1. Couëttil et al (2016) - Inflammatory Airway Disease of Horses-Revised Consensus Statement.
2. Hinchcliff et al (2015) - Exercise Induced Pulmonary Hemorrhage in Horses: American College of Veterinary Internal Medicine Consensus Statement.
3. Richard et al (2009) - Tracheal inflammation syndrome: clinical and bacteriological evaluation.
4. Crispe et al (2017) - The association between exercise-induced pulmonary haemorrhage and race-day performance in Thoroughbred racehorses.
5. Morley et al (2015) - Exercise-induced pulmonary haemorrhage impairs racing performance in Thoroughbred racehorses.
6. Malikides et al (2003) - Comparison of tracheal aspirates and bronchoalveolar lavage in racehorses: Evaluation of the diagnostic significance of neutrophil percentage.
7. Depecker et al (2015) - Bronchoalveolar lavage fluid in Standardbred racehorses: influence of unilateral/bilateral profiles and cut-off values on lower airway disease diagnosis.

Conclusion & limits:

- Innovative and interesting database
- Methodological biases: number of individuals included, performance measurement
- The relationship between airway colonization by bacterial or fungal elements and the link with performance remains to be proven: Pilot study
- Search for fungal elements: *Is the BAL more specific than the TW?*