CAPNOGRAPHY WAVEFORM DURING ANESTHETIC INDEX DETERMINATION IN CHICKENS (Gallus gallus domesticus)

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Introduction

The respiratory anesthetic index (AI) of an inhalant anesthetic is the ratio between the expired concentration required to induce apnea and its minimum anesthetic concentration (MAC) and can be used as an indicator of drug safety.

Birds have limited functional residual capacity, which limits the duration of apnea tolerated without considerable risk of hypoxemia and death. In ducks (Anas platyrhynchos), the isoflurane AI is 1.65, and in chickens, is 2.80. However the capnographic waveform changes during this determination were not reported.

Aim

To report the variation of capnography waveforms observed during the AI determination on chickens.

Material and Methods

- Institution Animal Ethics Committee – 19804/16
- 6 Hy-line w36 chickens (1.11 ± 0.06 kg)
- Anesthetized with isoflurane spontaneous breathing

<table>
<thead>
<tr>
<th>Individual MAC</th>
<th>Bracketing method</th>
<th>FeISO = 2.0MAC</th>
<th>+ 0.5 MAC until apnea</th>
<th>Isoflurane stopped</th>
<th>Respiratory support</th>
<th>Recover</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 week washout</td>
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- During MAC determination, the capnography waveforms presented a normal pattern
- During AI determination = gap between caudal and cranial respiratory movement as FeISO increase

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<tr>
<th>Mean ± SD</th>
<th>MAC</th>
<th>AI</th>
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<tbody>
<tr>
<td>HR (bpm)</td>
<td>250 ± 50</td>
<td>320 ± 34*</td>
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<tr>
<td>ETCO2 (mmHg)</td>
<td>35 ± 6</td>
<td>103 ± 11*</td>
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Notch on phase III at 2.0 MAC
Double-wave at 2.5 MAC
Total separation at 3.0 MAC

Results

There is a distinct change in the pattern of respiratory movement and consequently capnography waveform in chickens related to the increase in isoflurane end-tidal concentration. Observing any these patterns could be indicative of an excessive anesthetic depth.

Conclusion

References