FEEDING BEHAVIOUR OF 10 WEEK OLD PULLETS FOLLOWING BEAK TRIMMING AT HATCH

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Summary

This experiment examined whether chronic pain in the beak was still evident in 10 week-old layer pullets beak trimmed at hatch by comparing their feeding and pecking ability with a control group not trimmed. There was no evidence to indicate the beak was sore as beak trimmed pullets pecked more at the cage (P<0.05) and had more toe pecks and preening bouts (P>0.05). Beak trimmed pullets also made more feed pecks and feed pecks per gram (P>0.05), suggesting beak trimmed pullets had reduced mechano reception than control pullets. While these data suggest no reduction in any pecking behaviours and thus an absence of chronic pain it is not known if the force applied when pecking differed between treatments.

I. INTRODUCTION

Beak trimming is performed early in the life of commercial hens to decrease injuries caused by the behavioural vices of cannibalism, bullying, and feather and vent pecking. It involves partial removal of the upper and lower beak using an electrically heated blade. Objections to the use of beak trimming include its removal of sensory receptors, with a subsequent reduction in feed intake (Glatz and Lunam, 1994) and pecking efficiency (Gentle et al., 1982); permanent loss of temperature and touch responses (Gentle, 1986b) and behavioural evidence (hyperalgesia and guarding behaviour) for persistent pain (Duncan et al., 1989; Gentle et al., 1990). A major concern is that beak trimming may induce chronic pain. Traumatic-neuromas in the beak stump after trimming have been implicated as a cause of chronic pain in commercial hens (Breward and Gentle, 1985; Gentle, 1986a). In our studies (Lunam et al., 1996) neuromas were present in all beaks at 10 weeks, but neuromas were not found at 70 weeks after moderate trimming at hatch. As neuromas were not observed in adult hens that had been moderately trimmed at hatch, our results indicate that they develop and persist for at least 10 weeks, before resolving. This experiment was undertaken to determine if there was behavioural evidence for the presence or absence of persistent neuromas by making studies on feed and pecking behaviours of pullets 10 weeks after trimming at hatch.

II. MATERIALS AND METHODS

(a) Beak trimming and imprinting

Twenty day-old chickens were beak trimmed soon after hatch according to Australian Model Code of Practice for the Welfare of Domestic Poultry (1995). A heated blade on a commercial electric beak trimming machine cut and cauterised for half the upper beak and one third of the lower beak for two seconds. Twenty control chickens were not beak trimmed.

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Chickens were housed in a battery brooder and imprinted for 60 mins daily to peck at a red plastic block (lxbxd= 3 x 3 x 3 cm) in the first 5 days of life. Red block was held by handler and moved around in brooder to encourage chickens to follow and peck at the moving block. At the end the daily imprinting period chickens approached and pecked at the block when it was placed on the brooder floor. It was hypothesised that if beaks were sore 10 weeks after trimming, birds would peck less at red block than control chickens. At 4 weeks of age pullets were transferred into rearing cages. Birds were fed a chick starter mash from 0-4 weeks and a pullet grower mash thereafter.

(b) Feeding behaviour

Twenty birds (10 weeks of age) from each treatment were deprived of feed 1 hour prior to testing. Individual birds were placed in a test cage with a feed hopper attached. Pullets had been previously placed in the test cages for three 30 min training periods prior to the test with feed available. Feed was weighed into a hopper and pecks at feed and billing of feed (bird flicking feed from side to side in hopper) was monitored for 30 minutes with a video recorder. In addition bouts of dust bathing and number of head shakes were recorded and feed pecks per gram of feed consumed calculated. A higher number of head shakes was interpreted as increased sensitivity to pain (Gentle et al., 1990). Filming of birds took place from 900-1800 h and took 2.5 days to complete.

(c) Pecking behaviour

The same birds used for the feeding behaviour studies were used for the pecking studies. Twenty birds (10 weeks of age) from each treatment were deprived of feed 1 hour prior to testing. Individual birds were placed in a test cage with a feed hopper attached. Pullets had been previously placed in the test cages for three 30 min training periods prior to the test with feed available but without the presence of the red block. Red block was placed in bottom of a feed hopper with no feed provided. Pecking at red block, pecking at feed hopper, toe pecking, pecking at cage and preening bouts were monitored for 30 min with a video recorder. Filming of birds took place from 900-1800 h and took 2.5 days to complete.

(d) Data analyses

The experiment was analysed to determine the effect of beak trimming on behaviour of pullets using the general linear models procedure using SAS GLM (Statistical Analysis Systems Institute Inc., 1988).

III. RESULTS AND DISCUSSION

If pullets were suffering from chronic pain, they would be expected to engage in less pecking and preening bouts. There was no evidence for this in the present experiment. Beak trimmed birds pecked more at the cage (P<0.05) and, while the differences were not statistically significant, also pecked more at the feed hopper (Table 1) and had more toe pecks and preening bouts (P>0.05). In addition they also made more feed pecks and feed pecks per g (Table 2) of feed consumed from hopper (P>0.05). Beak trimmed and control chickens showed little interest in pecking at the red block. While these data suggest no reduction in any pecking behaviours and thus an absence of chronic pain, it is not known if the force applied when pecking differed between the treatments. Beak trimming may alter the sensory
perception of the bird (Gentle et al., 1982) and reduce the ability of the pullet to pick up food (Workman and Rogers, 1990). We observed a decrease in pecking efficiency in our experiment with beak trimmed pullets making both more pecks at the food (P > 0.05) and more pecks per gram of food consumed (P > 0.05) than the control pullets (Table 2). Contrary to a previous report (Gentle et al., 1990) there was an increase in pecks (P < 0.05) made at the cage and the feed hopper (P > 0.05) by the beak trimmed pullets compared to the controls despite neuromas being observed in trimmed beaks at 14 weeks (Lunam et al., 1998). It should be borne in mind, however, that Gentle et al. 1990 made their behavioural assessment of chronic pain 6 weeks after beak trimming. Our studies were made 10 weeks after trimming when it is likely that neuromas were in the process of resolving (Lunam et al., 1996).

The increased pecking and visual stimulation gained by pullets as a result of feeding appeared to encourage more dust bathing (P > 0.05) in beak trimmed pullets compared to controls (Table 1). Petherick et al. (1993) report the sight of a dusty substrate is an important factor in initiating dust bathing. Feather pecking is more likely to occur when birds are dust bathing (Vestergaard et al., 1993), presenting a problem for the egg farmer. Beak trimmed pullets are more likely to dust bathe and be pecked than controls, yet if beak trimming is not undertaken cannibalism will occur.

Our study has shown that beak trimmed birds in the test cage had significantly fewer head shakes than the controls. This indicates that trimmed birds are less fearful than untrimmed ones, supporting the findings of Lee and Craig (1991).

These results suggest that 10 weeks after beak trimming pullets may not be suffering the degree of chronic pain originally thought despite presence of neuromas. Instead our results indicate that beak trimmed pullets have reduced mechano reception ability as a result of the altered beak shape.

**Table 1.** Pecking behaviour in a 30 minute period (feed unavailable) for 10 week old pullets beak trimmed at hatch versus control group not trimmed. P = probability in one-way analysis of variance.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Cage pecks</th>
<th>Hopper pecks</th>
<th>Toe pecks</th>
<th>Preening bouts</th>
<th>Pecks at red block</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>10.5a</td>
<td>2.5</td>
<td>0.3</td>
<td>10.0</td>
<td>1.5</td>
</tr>
<tr>
<td>Beak trim</td>
<td>16.1b</td>
<td>6.4</td>
<td>0.7</td>
<td>12.8</td>
<td>1.1</td>
</tr>
<tr>
<td>P</td>
<td>0.02</td>
<td>0.09</td>
<td>0.22</td>
<td>0.59</td>
<td>0.70</td>
</tr>
</tbody>
</table>

**Table 2.** Feeding behaviour in a 30 minute period following feed withdrawal for 10 week old pullets beak trimmed at hatch versus control group not trimmed. P = probability in one-way analysis of variance.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Feed pecks per g</th>
<th>Feed intake (g/bird)</th>
<th>Feed pecks</th>
<th>Feed bills</th>
<th>Dust bathes</th>
<th>Head shakes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>98</td>
<td>3.3</td>
<td>281</td>
<td>88</td>
<td>8</td>
<td>2.8a</td>
</tr>
<tr>
<td>Beak trim</td>
<td>139</td>
<td>3.1</td>
<td>368</td>
<td>88</td>
<td>17</td>
<td>1.1b</td>
</tr>
<tr>
<td>P</td>
<td>0.09</td>
<td>0.70</td>
<td>0.23</td>
<td>0.99</td>
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</tbody>
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REFERENCES


