

EXPERIENCE USING CALCIUM CHLORIDE DOG NEUTER INJECTION IN ECUADOR

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OBJECTIVE

Evaluate calcium chloride dehydrate in alcohol (calcium chloride) as a method of population control in 3 impoverished rural communities of Cotacachi, Ecuador



COTACACHI

Cotacachi is a beautiful town of about 8,000 people located in the northern Andes mountains of Ecuador. It is a culturally rich town known for its leather goods and Indigenous heritage. Just beneath the surface however, there is a sad truth that over shadows the community; dog over population

Description of the 3 chosen communities

- There is an overall lack of Education
- Neuter only for change of behavior
- Due to low income, dogs are not treated as a priority
- Owners allow their dogs to roam throughout the community
- Small community houses were used to perform the clinics.
- This study group was part of approximately 100 male dogs presented for chemical sterilization during this campaign.





Methodology

Injections

- The dogs were given calcium chloride intra-testicular injection using standard protocols.
 - *Formulation used - 20% (w/v) calcium chloride dihydrate USP in 190-proof ethyl alcohol USP*
- Dosage depending on testicular width, from 0.25 - 2.5 ml per testicle



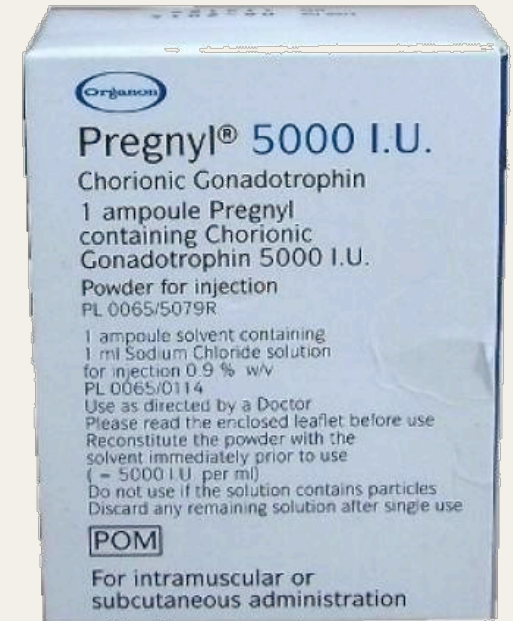
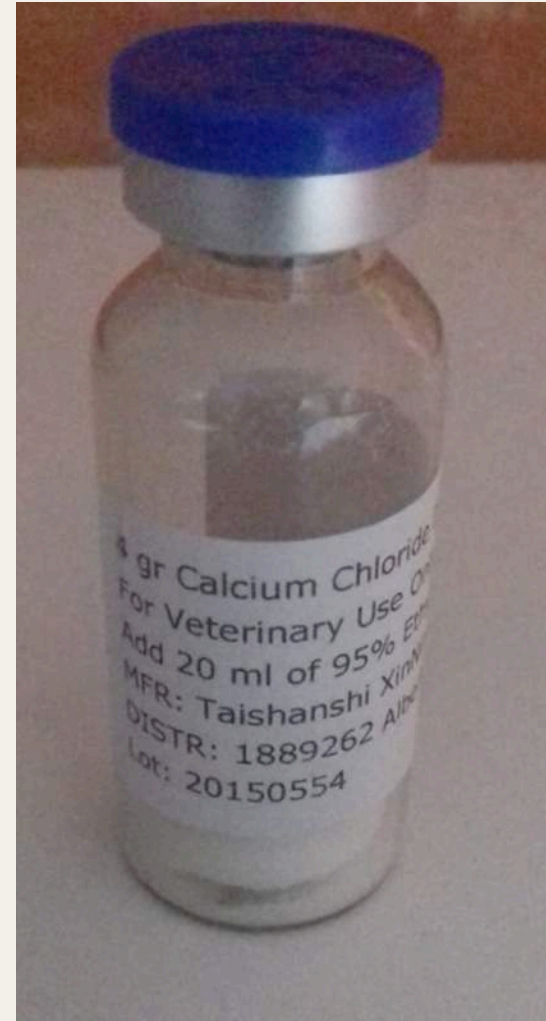
Methodology

- Testicular measurements were taken at day 3 and day 30. A questionnaire was completed by the owners on these days.
- Data gained from the questionnaire is subjective.



Methodology Testosterone

- A human chorionic gonadotropin (hCG) testosterone stimulation test was performed prior to calcium chloride on day 0 and 30.
 - 500 - 1000 UI/DOG IM
- Dogs over 20kg 1000 UI
- Dogs under 20 kg 500 UI





Day 0

34 Patients

1. Collection Blood Sample
2. Injection of HCG IM
3. Sedation
4. Measurement
5. Injection of Calchloran
6. Collection 2nd Blood sample
7. Send home with anti-inflammatory medicine



Day 3

34 Patients

1. Patients were re-examined
2. A questionnaire was completed
3. Testicle size was re-measured
4. Anti-inflammatory medicine dosage was reevaluated

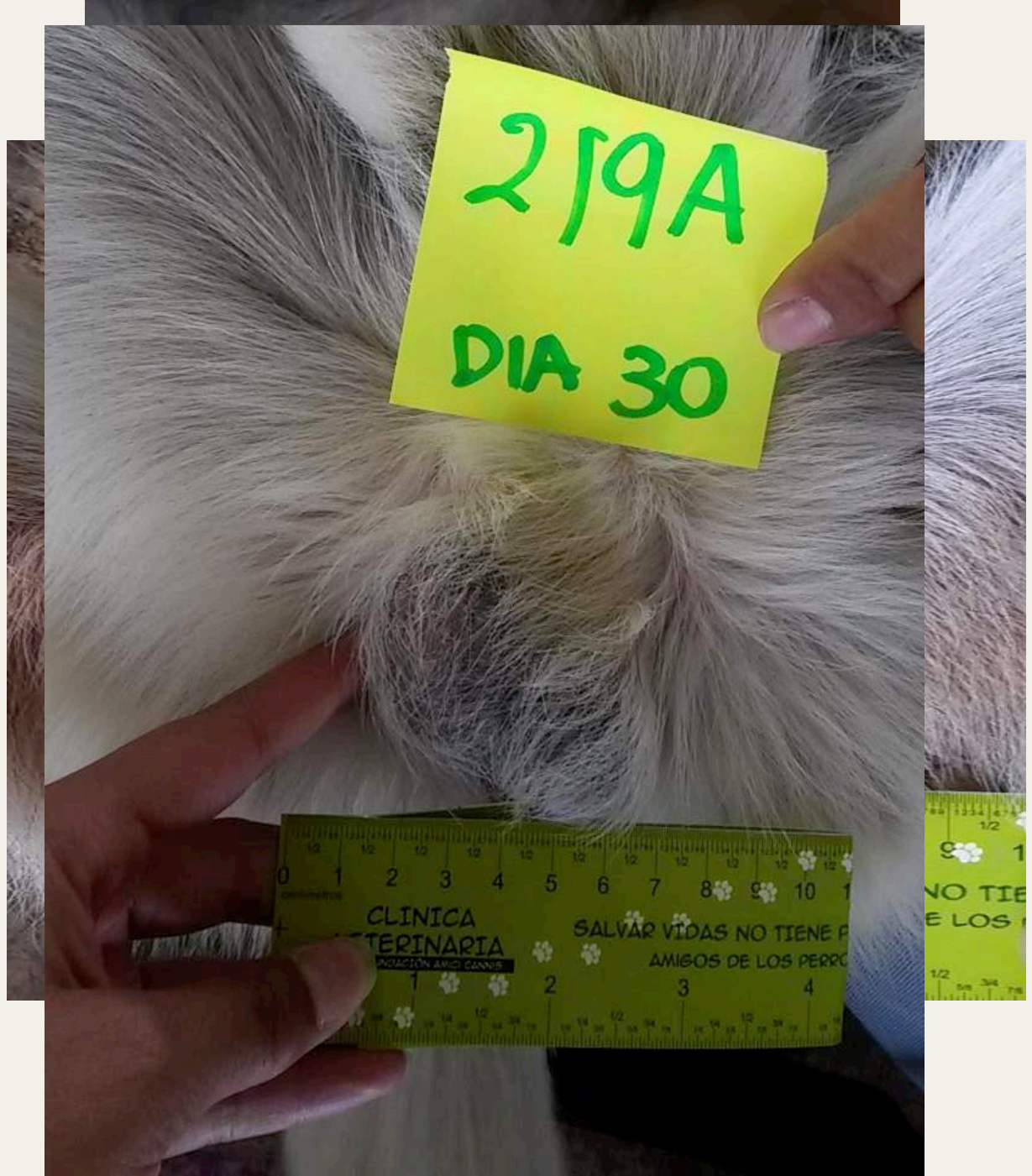


ON DAY 3, INJECTIONS AND
FOLLOW UP DATA WERE
OBTAINED FROM 34 DOGS.

ON DAY 30, A SUBGROUP
OF 16 DOGS WAS
EVALUATED.

Day 30

1. Blood Samples were collected
2. Injections of HCG given
3. Measurement of testicles taken
4. A 2nd Blood Sample Collected
5. Evaluation





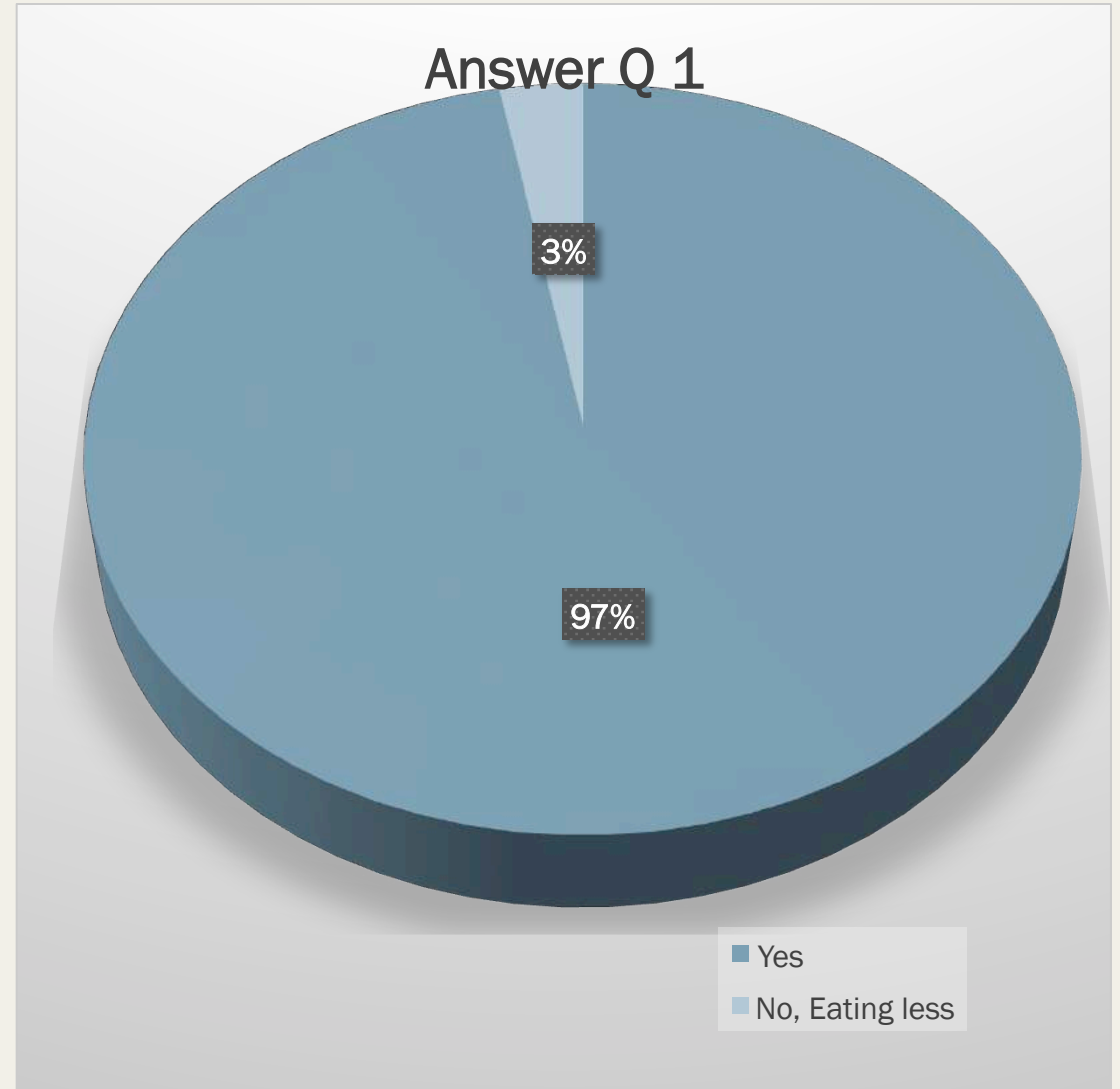
RESULTS



Day 3

Questionnaire

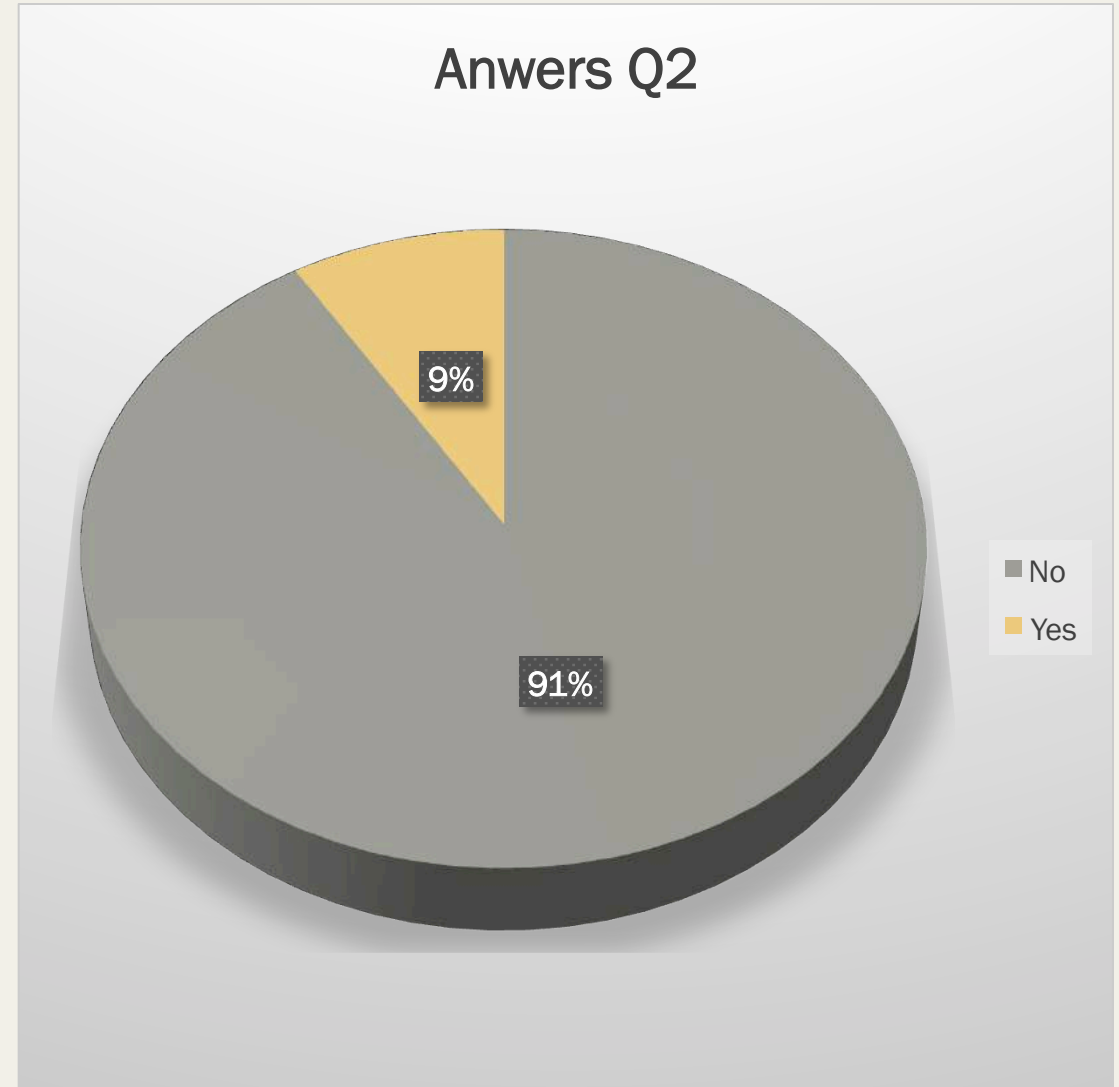
1. Has your dog been eating normally since the injection?



Day 3

Questionnaire

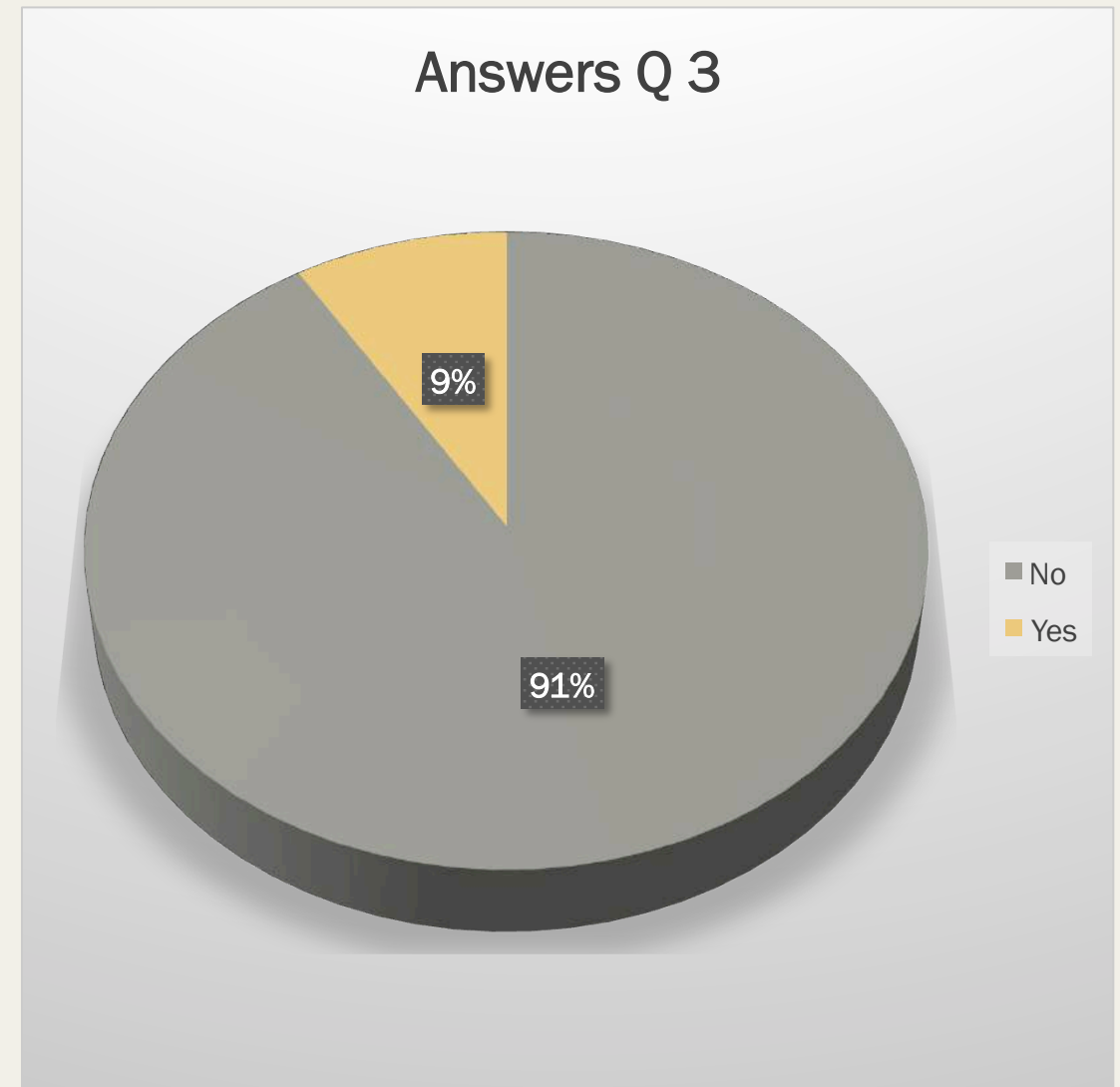
2. Has your dog's behavior changed since the injection?



Day 3

Questionnaire

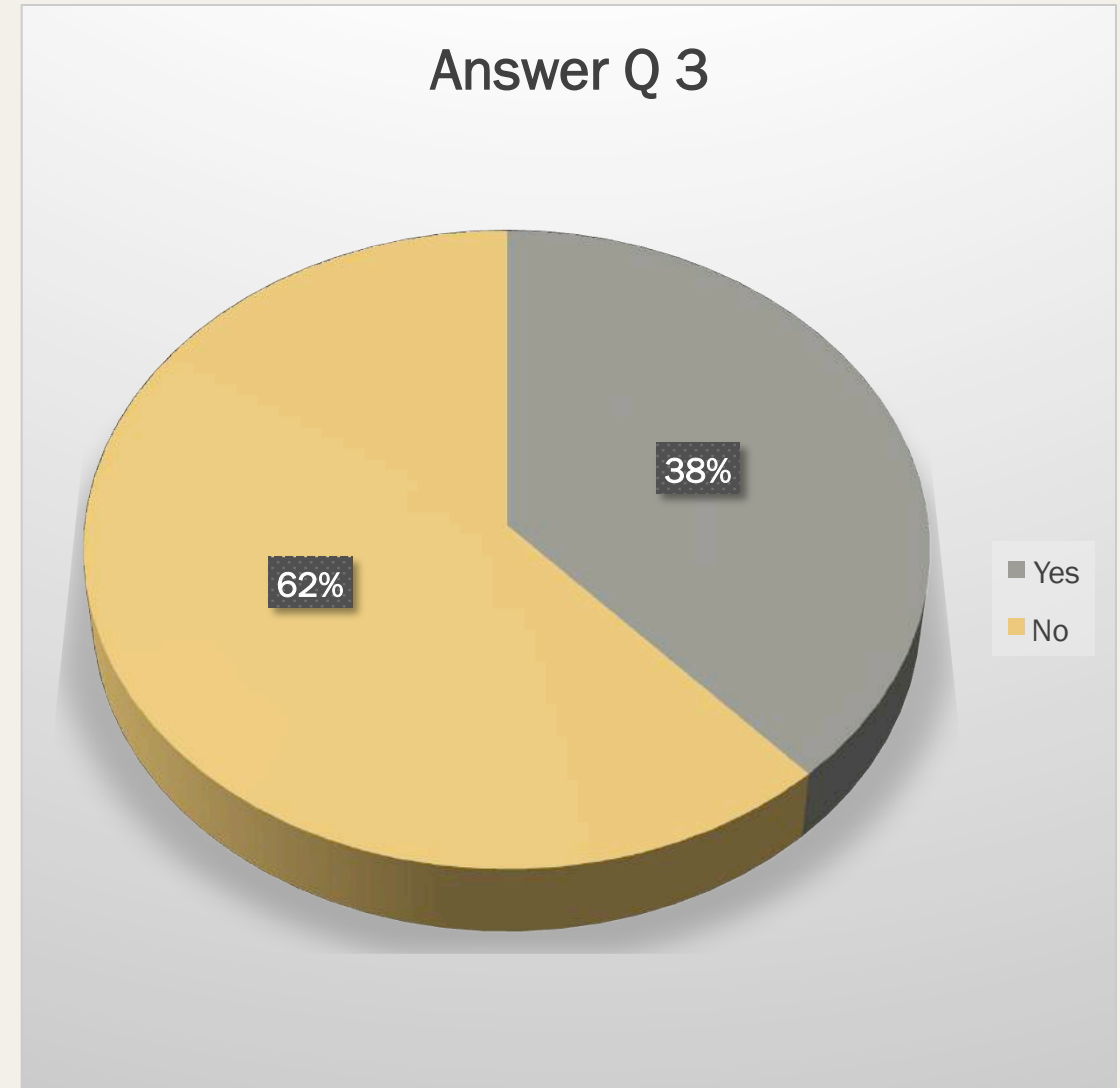
3. Has your dog been licking his testicles?



Day 3

Questionnaire

4. Did you notice swelling of the testicles?

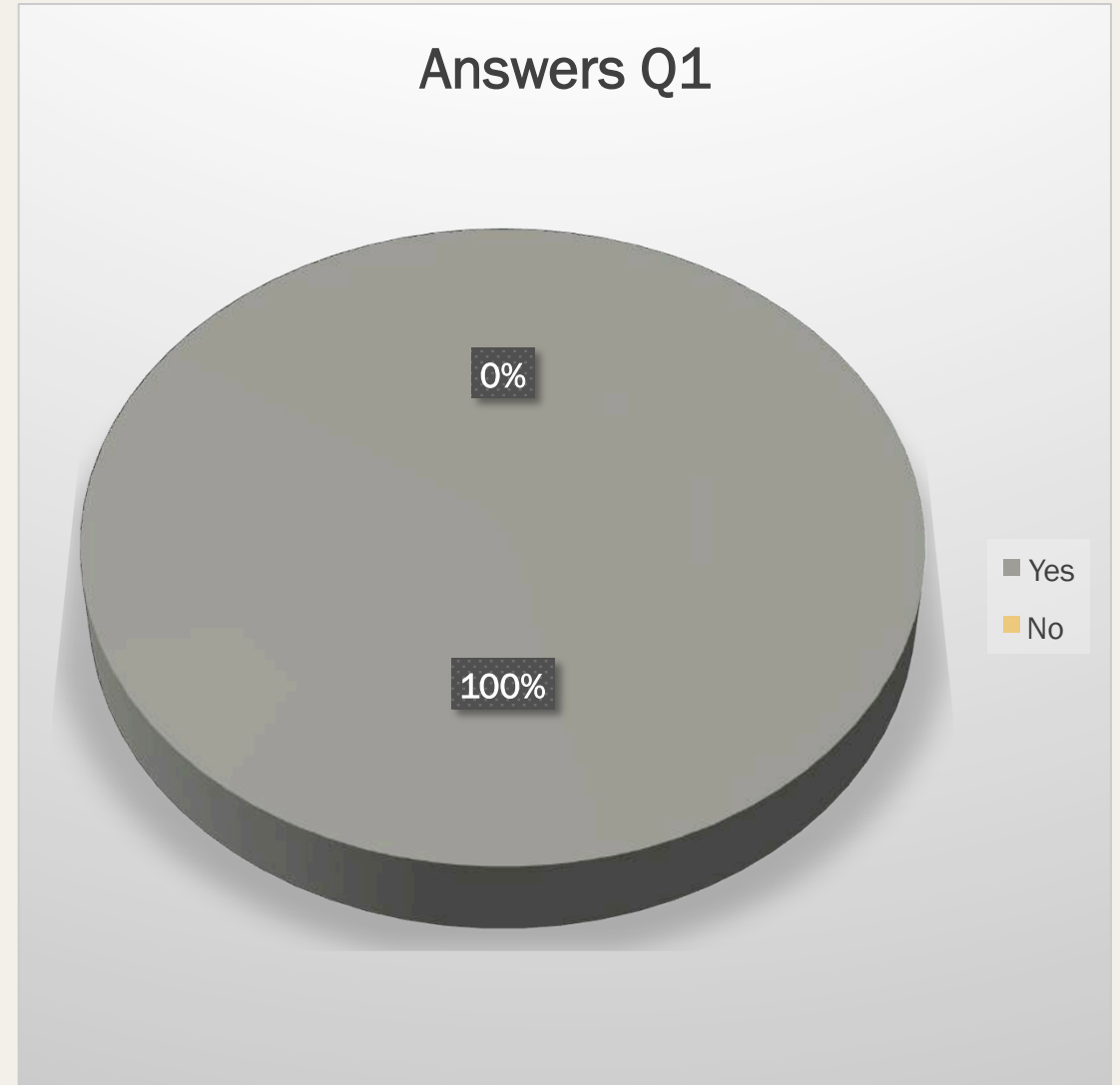


Some of the owners reported swelling that was already improving

Day 30

Questionnaire

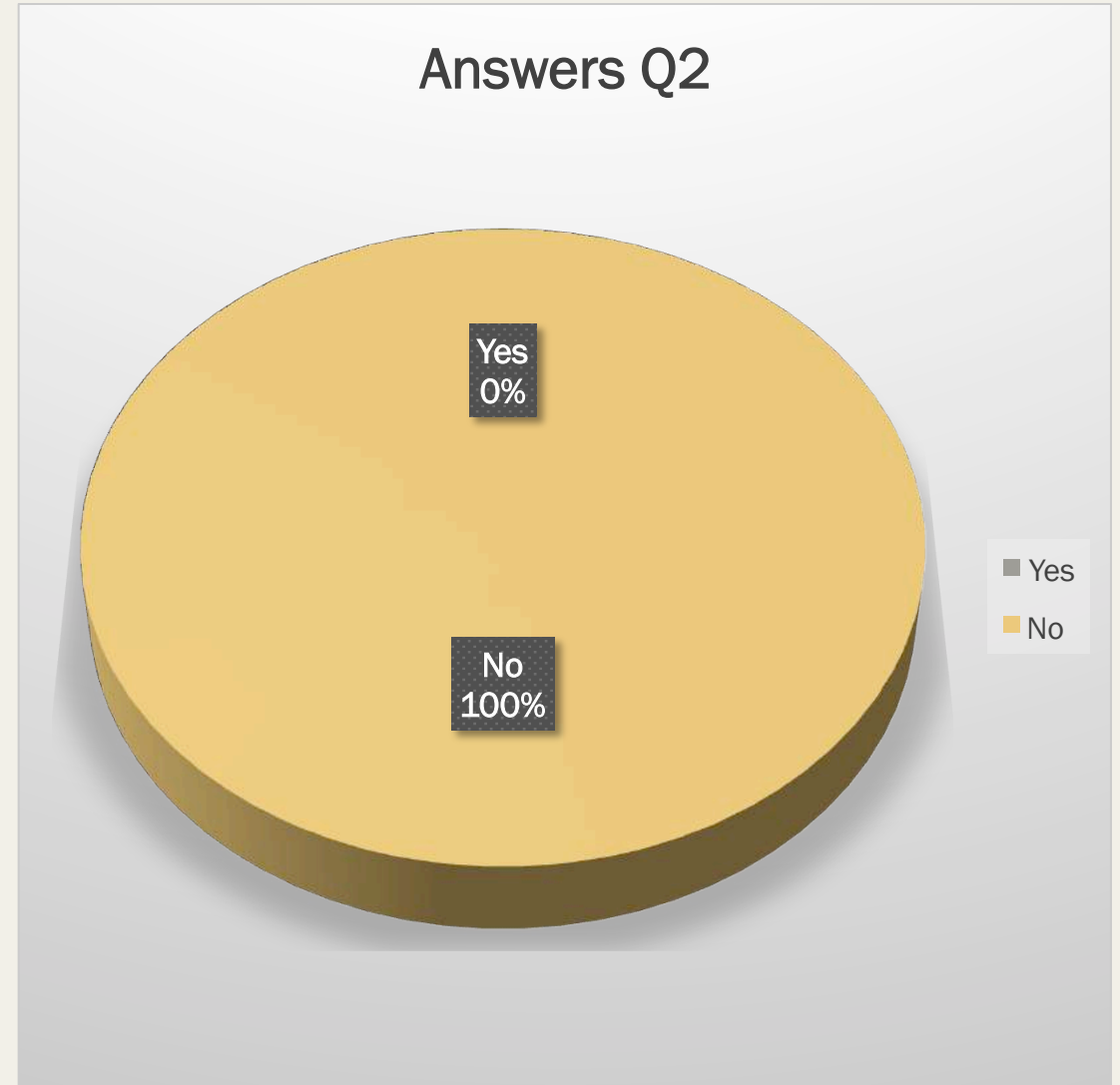
1. Has your dog recovered from the injection?



Day 30

Questionnaire

2. Have you noticed any changes in behavior?





Testicular size Day 3

Most of the dogs in the study group showed a mild but significant increase in swelling following injection [$t(1,34) = -6.95, p < 0.01$].

Baseline average: 23.1 mm (SD=4.9)

Day 3 average: 29.7 mm (SD=7.5)



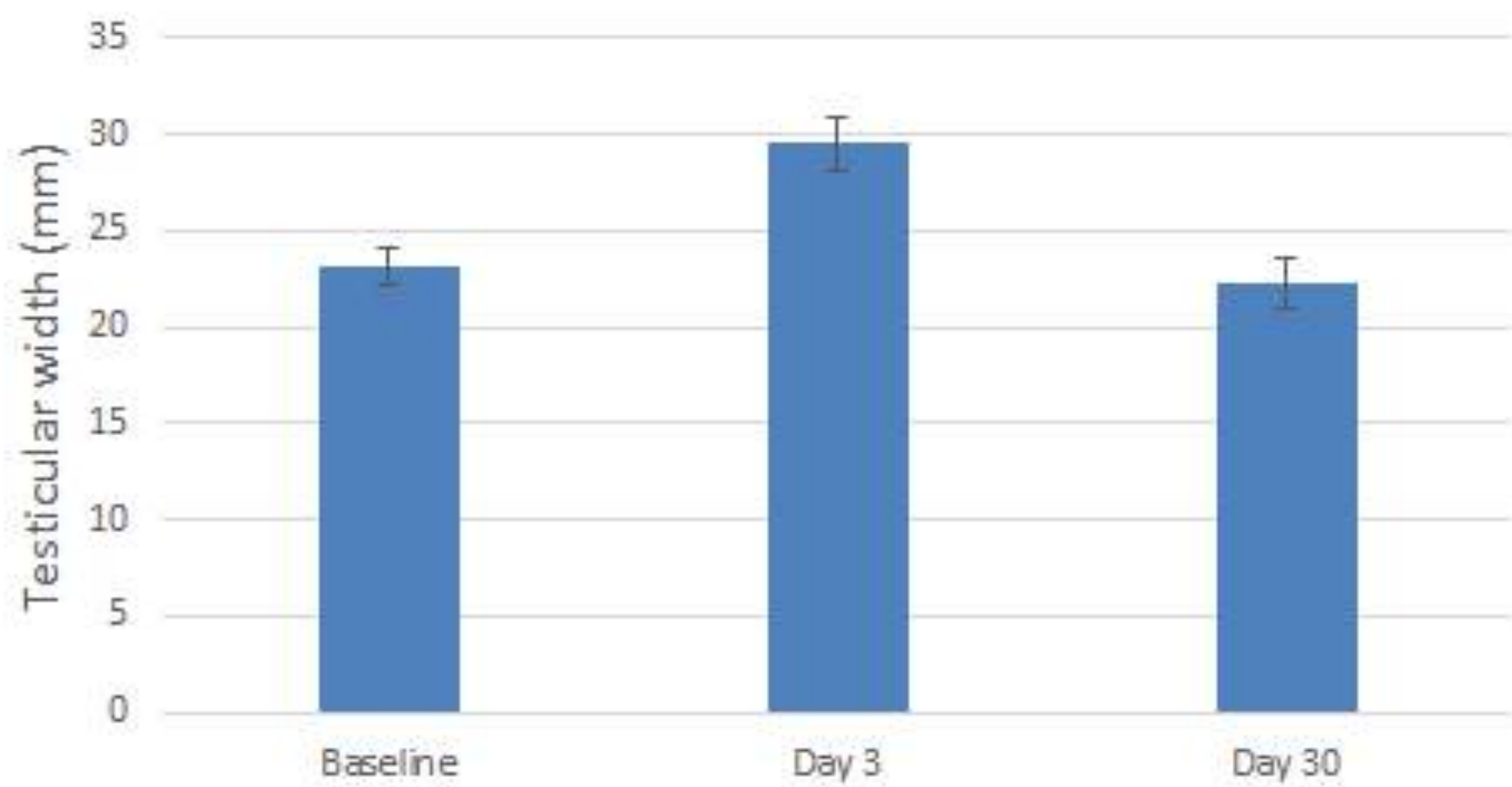
Testicular size Day 30

By day 30, testicular size had significantly decreased compared to day 3 [$t(1,16)=4.25, p < 0.01$], and was similar to baseline.

Day 30 average: 22.3 mm
(SD=5.0)



Testicular size



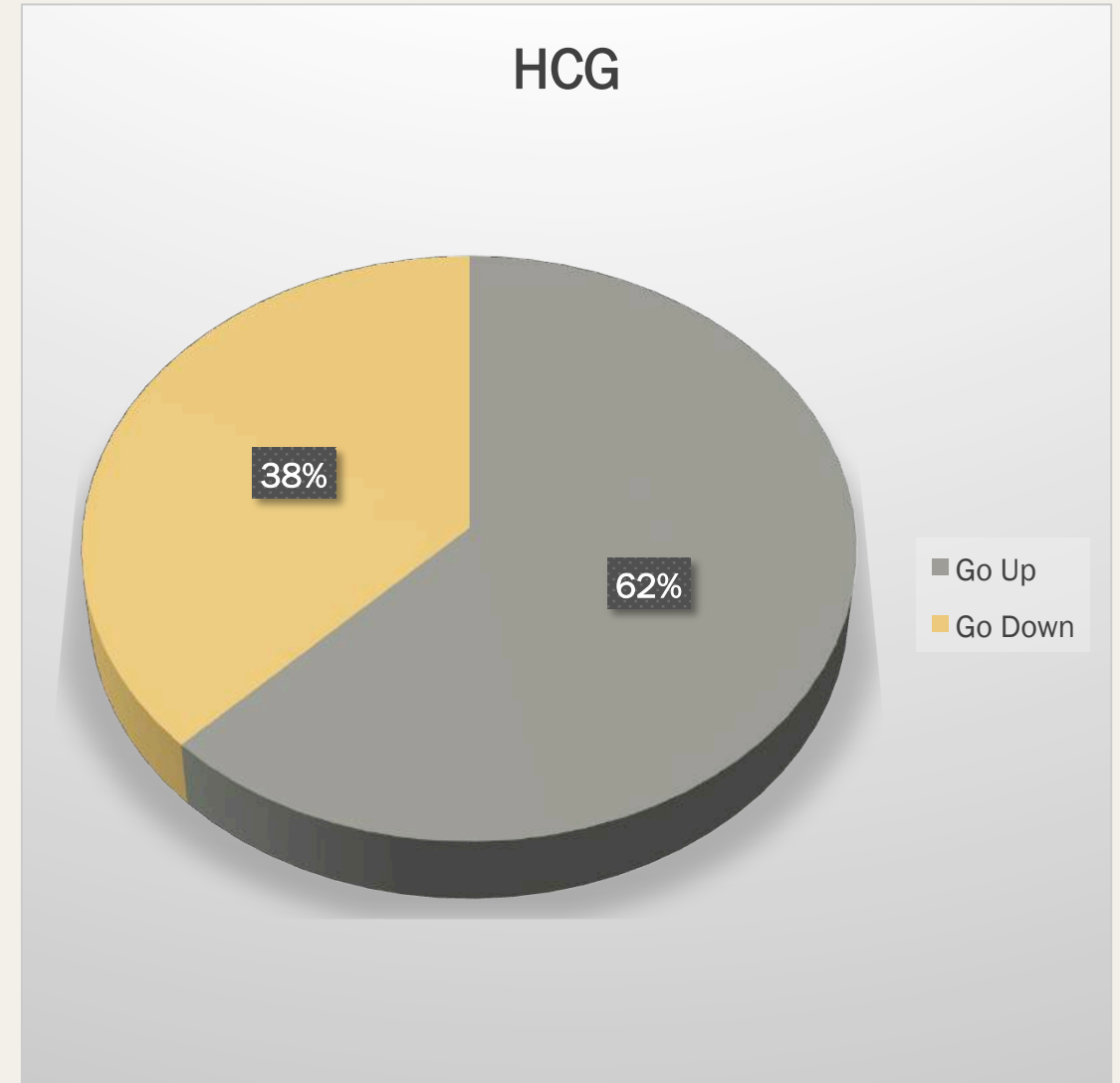


Testosterone Levels

Testosterone levels post hCG were not significantly different from baseline to day 30

Baseline: Average 1.58ng/ml (SD=1.68)

Day 30: Average 2.16 ng/ml (SD=3.27)



Percentage of dogs that showed an increase or decrease in testosterone levels post hCG stimulation from baseline to day 30

Testosterone Levels after HCG Injection on the 16 dogs

Day 0: Average 1.58ng/ml (SD=1.68)

Day 30: Average 2.16 NG/ML (SD=3.27)

ng/ml	ng/ml	Difference	Result
1.8	3.2	1.4	↑
0.75	1.1	0.35	↑
0.084	1.8	1.716	↑
0.079	0.71	0.631	↑
0.118	2.2	2.082	↑
0.7	0.07	-0.63	↓
1.7	4	2.3	↑
0.82	0.08	-0.74	↓
0.21	0.62	0.41	↑
0.8	1.4	0.6	↑
0.244	6.3	6.056	↑
0.5	0.98	0.48	↑
9.2	2.4	-6.8	↓
0.9	0.8	-0.1	↓
7.5	1.2	-6.3	↓
9.2	0.6	-8.6	↓





COMPLICATIONS

Of the 34 dogs in the study, 16 had swollen testicles. Mostly caused by the anti-inflammatory medicine not being used.

Complications ranged from moderate tissue irritation to complete scrotal sloughing in 2 dogs.

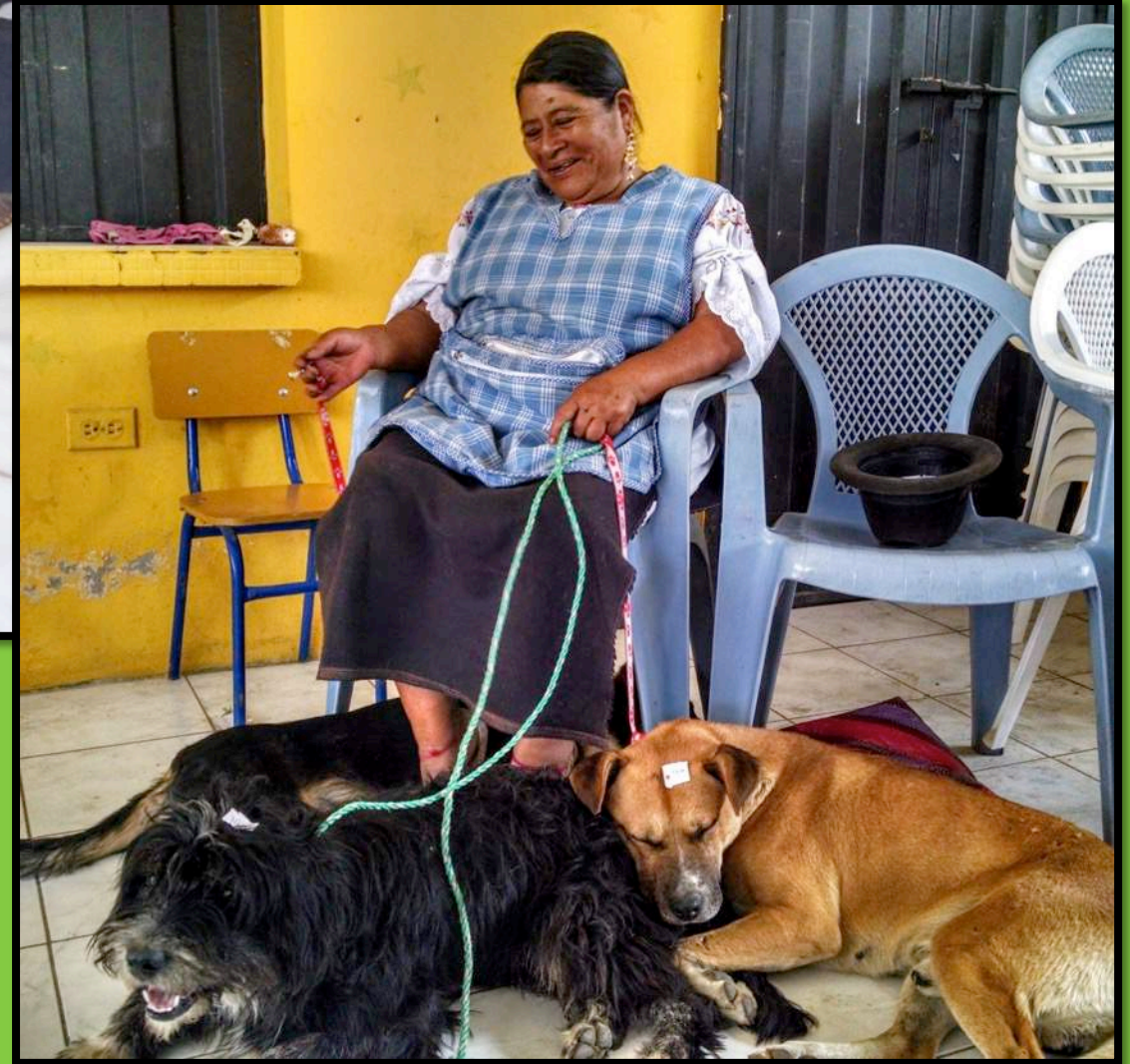
Complications more common in dogs younger than 1.5 years

All study dogs received veterinary care, and those with complications were treated and fully recovered.



Conclusion

- After 30 days post-calcium chloride injection, there was a reduction in testicular size but not in testosterone production.
- Unfortunately, due to cultural influences, our test group and follow-up size was smaller than hoped.
- Dog owners indicated that there was no change in the dogs behavior. (In our situation this was positive as this culture does not want the behavior of the dogs to change).
- In order to continue the use calcium chloride neuter injection, complications must be reduced.





Thank you for your attention!!