Capítulo 11

Conclusiones

Primera

La respuesta de estrés agudo en el corzo provoca un incremento de la frecuencia cardiaca, de la temperatura rectal, del recuento de eritrocitos, de la concentración de hemoglobina, del valor hematocrito, del recuento de leucocitos y de neutrófilos, de la actividad de las enzimas musculares (ALT, AST, CK y LDH) y de la concentración sérica de urea, creatinina, lactato, potasio y cloruros; y una disminución del recuento de linfocitos.

Segunda

El transporte constituye un estímulo más amenazante para los corzos que la inmovilización física, como demuestran el aumento de la frecuencia cardiaca, el mayor tiempo necesario para que la temperatura rectal regrese al nivel 'basal' y el aumento de la concentración sérica de cloruros a lo largo del transporte.

Tercera

La respuesta de estrés agudo causada por la captura y la inmovilización en los corzos cautivos da lugar a un mayor recuento de eritrocitos, a una mayor concentración de hemoglobina, a una mayor actividad sérica de ALT, AST, CK y LDH, y a una mayor concentración sérica de creatinina, lactato y glucosa que en los corzos salvajes.

Cuarta

En los corzos inmovilizados, el tratamiento con acepromacina hace que la frecuencia cardiaca se estabilice antes, provoca una disminución a lo largo del tiempo en el recuento de eritrocitos y en la concentración de hemoglobina, acelera la disminución de la concentración sérica de lactato y previene el aumento de la concentración sérica de creatinina. El tratamiento con acepromacina también da lugar a valores más bajos en el recuento de eritrocitos, en la concentración de hemoglobina, en el valor hematocrito y en la actividad sérica de la ALT, la AST, la CK y la LDH en comparación con los controles.

Quinta

La acepromacina ejerce un mayor efecto en los corzos cautivos que en los salvajes. La frecuencia cardiaca, la actividad sérica de la ALT, la AST, la CK y la LDH, y la concentración sérica de creatinina, glucosa y potasio mostraron diferencias entre grupos de tratamiento en los corzos cautivos, mientras que éstas no se observaron en los salvajes.

Sexta

En los corzos transportados por carretera, el tratamiento con acepromacina hace que la temperatura rectal regrese antes a los niveles 'basales', da lugar a valores más bajos en el recuento de eritrocitos y en la concentración de hemoglobina en comparación con los controles, provoca una disminución de la concentración sérica de creatinina y previene el aumento de la actividad sérica de la ALT, la AST y la CK.

Séptima

La concentración sérica de cortisol no es un buen indicador del grado de tranquilización provocado por la acepromacina en el corzo.

Octava

Los corzos cautivos presentaron concentraciones fecales de 11,17-dioxoandrostanos superiores a los corzos salvajes, lo que indica que están sometidos a un mayor grado de estrés crónico.

Novena

La realización de radiografías postmortem *permite detectar lesiones ocasionadas durante las operaciones de manejo, que de otro modo pasarían inadvertidas y, por lo tanto, ayudan a mejorar los procedimientos de manejo.*

Capítulo 12

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Resumen

El objetivo del presente trabajo fue evaluar la respuesta de estrés de captura, manejo y transporte en el corzo (*Capreolus capreolus*) y sus posibles consecuencias, valorar el efecto de un neuroléptico fenotiacínico de corta duración (acepromacina) sobre dicha respuesta, establecer posibles diferencias en la respuesta de estrés agudo entre corzos salvajes y cautivos y evaluar la idoneidad de la determinación de metabolitos del cortisol en heces como método no agresivo para medir la actividad adrenocortical en el corzo.

Los corzos se capturaron mediante redes verticales y a continuación se inmovilizaron durante tres horas (estudio del estrés de captura en corzos salvajes -*Capítulo 4*- y estudio de las diferencias en la respuesta de estrés agudo entre corzos salvajes y cautivos -*Capítulo 5*-), o bien se sometieron a un transporte por carretera de nueve horas de duración (estudio del estrés de transporte -*Capítulo 6*-). En todos los casos se establecieron dos grupos: un grupo tratamiento, que recibió acepromacina intramuscular, y un grupo control, que recibió suero salino fisiológico intramuscular. Durante el periodo de estudio se registraron la frecuencia cardiaca y la temperatura rectal mediante técnicas telemétricas no agresivas y se obtuvieron muestras sanguíneas mediante punción venosa (para realizar el hemograma y las determinaciones bioquímicas) y muestras de heces (para la determinación de metabolitos del cortisol -*Capítulo 7*-). Además, a raíz de un estudio de adaptación del corzo a la cautividad, se produjeron tres casos de miopatía de captura (*Capítulo 8*) y un caso de fractura múltiple de las apófisis transversas de las vértebras lumbares (*Capítulo 9*).

La respuesta de estrés agudo (captura, inmovilización y transporte) se caracterizó por un aumento de la frecuencia cardiaca, de la temperatura rectal, del recuento de eritrocitos, de la concentración de hemoglobina, del valor hematocrito, del recuento de leucocitos y de neutrófilos, de la actividad sérica de las enzimas musculares (alanina aminotransferasa [ALT], aspartato aminotransferasa [AST], creatina cinasa [CK] y lactato deshidrogenasa [LDH]) y de la concentración sérica de urea, creatinina, lactato, potasio y cloruros; y por una disminución del recuento de linfocitos. En los corzos cautivos, la respuesta de estrés agudo dio lugar a un mayor recuento de eritrocitos, a una mayor concentración de hemoglobina, a una mayor actividad sérica de ALT, AST, CK y LDH, y a una mayor concentración sérica de creatinina, lactato y glucosa que en los corzos salvajes. Estas diferencias pueden atribuirse a diferencias en la dieta, al efecto del 'entrenamiento' (condición físisca) y/o a una sensibilización de los ejes simpático-adrenomedular e hipotálamo-hipofisario-adrenocortical provocada por el estrés

crónico asociado a la cautividad (los corzos cautivos presentaron una concentración fecal de metabolitos del cortisol [11,17-dioxoandrostanos] superior a la de los corzos salvajes). Por otro lado, el transporte constituyó un estímulo más amenazante para los corzos que la inmovilización, como demostraron el incremento de la frecuencia cardiaca, el mayor tiempo necesario para que la temperatura rectal regresara a los niveles 'basales' y el incremento de la concentración sérica de cloruros a lo largo del transporte.

En los corzos inmovilizados, el tratamiento con acepromacina hizo que la frecuencia cardiaca se estabilizara antes y provocó una reducción a lo largo del tiempo en el recuento de eritrocitos y en la concentración de hemoglobina. Además, la acepromacina aceleró la disminución de la concentración sérica de lactato e hizo que la concentración sérica de creatinina no aumentara. Los animales tratados también presentaron niveles más bajos en el valor hematocrito y en la actividad sérica de la ALT, la AST, la CK y la LDH en comparación con los controles. Además, la acepromacina ejerció un efecto más marcado en los corzos cautivos que en los salvajes. La frecuencia cardiaca, la actividad sérica de las enzimas musculares (cuando se comparaban los grupos cautivos y salvajes), y la concentración sérica de creatinina, glucosa y potasio mostraron diferencias entre grupos de tratamiento en los corzos cautivos, mientras que éstas no se observaron en los salvajes. En los corzos transportados por carretera, el tratamiento con acepromacina hizo que la temperatura rectal regresara antes a los niveles 'basales', provocó una disminución de la concentración sérica de creatinina y previno el aumento de la actividad sérica de la ALT, la AST y la CK. En todos los corzos tratados (inmovilizados + transportados), el recuento de eritrocitos y la concentración de hemoglobina fueron inferiores que en los controles, y la concentración sérica de potasio no disminuyó, o lo hizo más lentamente. Sin embargo, en ningún caso se observaron diferencias significativas en la concentración sérica de cortisol entre grupos de tratamiento.

La vasodilatación que provoca la acepromacina a nivel muscular y renal es la responsable de las diferencias observadas en los niveles de enzimas musculares, lactato, potasio y creatinina, mientras que sus efectos centrales son responsables de las diferencias registradas en la frecuencia cardiaca y la temperatura rectal. Los resultados obtenidos sugieren que la administración de este fármaco puede prevenir el desarrollo de una miopatía de captura en operaciones de captura, inmovilización física y transporte.

El término 'miopatía de captura retardada aguda' fue el utilizado para describir el síndrome clínico y patológico observado en tres corzos que habían sido introducidos en un cercado para realizar un estudio de adaptación a la cautividad. Los hallazgos histopatológicos consistieron en una miopatía aguda y una nefrosis mioglobinémica. La ausencia de signos clínicos y de indicadores de un pronóstico negativo en el periodo entre la captura y el momento de la muerte, la muerte simultánea de animales capturados en días diferentes, la ausencia de lesiones macroscópicas en un corzo que murió ocho días después de la captura y la evidencia de que se produjo una persecución dentro del cercado, indican que la muerte fue desencadenada por un segundo episodio de estrés (el primero fue la captura y el transporte hasta el cercado). Otra consecuencia derivada del manejo fue la muerte de un animal tras sufrir una fractura bilateral múltiple de las apófisis transversas de las vértebras lumbares. La causa de las fracturas pudo ser la avulsión de las apófisis transversas por acción del músculo psoas mayor al introducir el animal en una caja de transporte. El diagnóstico se realizó mediante una radiografía *postmortem*, sin la cual hubieran pasado inadvertidas.