

A RETROSPECTIVE LOOK AT OUTCOMES OF RAPTORS WITH SPINAL TRAUMA



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Wildlife Rehabilitators of North Carolina

BACKGROUND

- Hind limb paresis and paralysis are common in raptors admitted to rehab facilities.
- In last 5 years, $148/4124 = 3.5\%$
- Prognosis is not easy to predict
- Goals
 - Identify prognostic indicators
 - Identify effective treatment modalities
 - Determine “when to quit”

BACKGROUND

- Retrospective study
 - 143 cases over 4 years
- Looked at several variables
 - Species
 - Age
 - Severity
 - Days to first visible improvement
 - Special treatments
 - Fracture visible in radiograph
- Excluded pelvic fractures

SEVERITY SCORE

Score	Clinical signs
1	Mild paresis, ataxia, kicking and grasping strongly
2	Severe paresis/paralysis. Deep pain present
3	No deep pain. Legs flaccid. No vent tone

OUTCOME VS SEVERITY

Outcome	Severity score (mean)
Released	1.33
Not released	2.56

Unpaired t test. $p < 0.0001$

Note: severity score is ordinal, not interval or ratio data,
so this test may not be entirely appropriate

No scores of 3 were released

OUTCOME VS SEVERITY

Severity	% released
1	58
2	7
3	0

Likelihood of release drops dramatically with severity

DAYS TO FIRST IMPROVEMENT

Outcome	Days (mean)
Released	3.2
Not released	5.0

Unpaired t test. $p = 0.0549$ – not quite significant.

Released birds showed significant improvement usually by day 3 or 4. Maximum by day 8.

* Recent case stood on day 10

OUTCOME VS SPECIES

Species	% released
BDOW	8
COHA	24
RSHA	8
RTHA	4

Species	Severity (mean)
BDOW	2.6
COHA	1.8
RSHA	2.5
RTHA	2.6

Unpaired t test. $p < 0.0001$

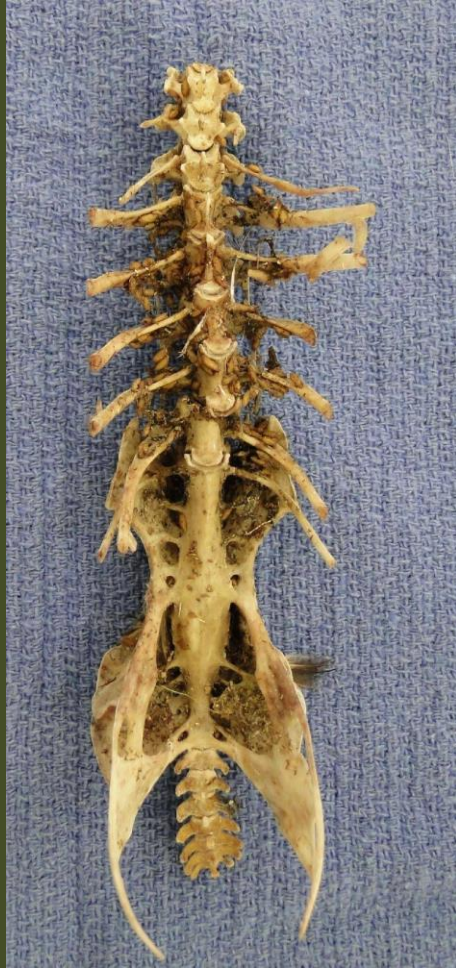
Cooper's hawk had by far the highest release rate

Cooper's hawk tended to have less severe neurologic deficits

FRACTURES VISIBLE ON RADIOGRAPH

- All visible fracture cases where not releasable.
- None of the released cases had a fracture visible on radiographs.
- Interestingly, deep pain was present on at least one case with a severely displaced spinal fracture.
- Very common to NOT see issues on spinal radiographs. Myelography is technically challenging. MRI is really required.

SPINE FRACTURE



Name: 8001W
ID: 17353
DOB: 09/09/2009
Date: 02/28/2018
Time: 11:47:55 AM
No: 1
x: 1.57



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TREATMENT MODALITY

- Treatment with dexamethasone had no effect on outcome.
- Typical treatment was 2 mg/kg IM once on admission. Criteria for treatment was somewhat random.
- Methylprednisolone sodium succinate may be better but is falling out of favor in human medicine.
- Steroids still used at CRC for the traumatic chorioretinitis.

MULTINOMIAL LOGISTIC REGRESSION MODEL

- Test the effects on the outcome of various independent variables.
 - Year
 - Season
 - Age
 - Severity
 - Use of dex
 - Species
- Outcome is defined as D24/E24, D/E or R

RESULTS

- Severity is associated with species ($P=0.0004$) but...
- Only severity affects outcome ($P < 0.05$)
- Species adjusted for severity is not significant.

TREATMENT CONCERNS

- Maintain hydration and weight
 - SQ fluids
 - Feed furless cutup whole prey
- Evacuate and keep vent clean
- Protect tail feathers with tail wrap
- Anti-inflammatories (meloxicam 0.5 mg/kg BID)
- Tramadol for analgesia
- SMZ-TMP if mutes are smelly/gritty
- Keep on thick towels and use towel donut

TREATMENT CONCERNS

- Recovery and reconditioning can be prolonged.
- Watch for mild residual ataxia, especially when turning on a perch.

WHEN TO QUIT

- No visible improvement for 10 days
- Not self-feeding
- Unable to evacuate or loss of vent tone.

CONCLUSIONS

Score	Clinical signs
1	Mild paresis, ataxia, kicking and grasping strongly
2	Severe paresis/paralysis. Deep pain present
3	No deep pain. Legs flaccid. No vent tone

- Outcome highly dependent on severity of injury.
 - Mild cases can do very well
 - Euthanize if
 - No deep pain response
 - Spine fracture visible on radiograph
- Improvement will generally be apparent within the first week

DON'T GIVE UP



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THANK YOU



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