

**Case Study 2: Molly – IVDD due to subluxation of L2-3
Dr. Shantel Julius, DVM**

History of Case

Name: Molly

Age: 11 years 5 months **DOB:** 04-15-2006

Breed: Maltese mix

Sex: Female **Altered:** Spayed

Dog's lifestyle/occupation: House pet, companion to owner

Brief history of dog's family history: Owner has had Molly since she was a puppy.



Brief history of problem in which dog is referred for: Molly presented for Oak Grove Animal Hospital (OGAH) on 07-26-2017 for complaint of not eating well that morning, firm abdomen, refusing to go down steps, shaking, and previous seizure (07-05-2017 lasting 30-45 secs). On PE, Molly was trembling, QAR, tense abdomen with no obvious pain or masses, decreased ROM bilateral hips (right worse than left), kyphosis, painful on mid-lumbar spinal palpation, no neurological deficits, and good anal tone. Referral for surgery or neurology consult is not an option.

Interventions:

Tramadol 50 mg – ¼ tablet PO q12hrs PRN
Gabapentin 100 mg – 1 cap PO q12hrs
Carprofen 25 mg – ¼ tablet PO q12hrs

Referring veterinarian's diagnosis:
IVDD

Test results:

Radiographs showed L1-2 collapsed vertebral space and a narrowed L2-3 vertebral space.
CBC and chemistry were NSF.

Surgery:

None

Past medical history:

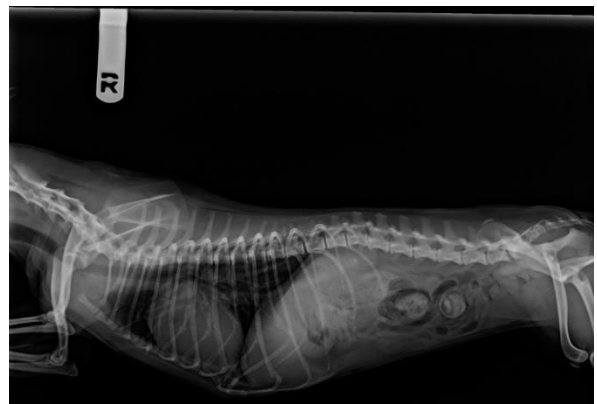
None pertinent

7/26/2017				7/26/2017			
Assay Name	Value	Ref. Range	Units	Assay Name	Value	Ref. Range	Units
GLU 107	70-143	mg/dL		RBC7.41	5.65-8.87	M/μL	
CREA0.80	0.5-1.8	mg/dL		HCT42.9	37.3-61.7	%	
BUN 21	7-27	mg/dL		HGB15.1	13.1-20.5	g/dL	
BUN/CREA	25	-		MCV57.9	61.6-73.5	fL	
PHOS3.02	5-6.8	mg/dL		MCH20.4	21.2-25.9	pg	
CA 10.3	7.9-12.0	mg/dL		MCHC	35.2	32.0-37.9	g/dL
TP 6.45	2-8.2	g/dL		RDW19.6	13.6-21.7	%	
ALB 3.02	2-3.9	g/dL		%RETIC	0.6	- %	
GLOB3.42	5-4.5	g/dL		RETIC	45.2	10.0-110.0	K/μL
ALB/GLOB	0.9	-		WBC7.46	5.05-16.76	K/μL	
ALT 56	10-125	U/L		%NEU	79.4	- %	
ALKP 31	23-212	U/L		%LYM	13.5	- %	
GGT 5	0-11	U/L		%MONO	4.2	- %	
TBIL0.40	0-0.9	mg/dL		%EOS2.8	- %		
CHOL219	110-320	mg/dL		%BASO	0.1	- %	
Na 151	144-160	mmol/L		NEU5.92	2.95-11.64	K/μL	
K 4.03	5-5.8	mmol/L					
Na/K	38	-					
Cl 115	109-122	mmol/L					
Osm Calc	302	-mmol/kg					

Evaluation

Monday, July 31st, 2017 – Initial Exam/Consult

Observation: QAR, owner reports that Molly is very difficult to give medications to, but she is able. Owner notes that at the end of 12 hours Molly is hunching and painful. Owner is restricting activity.



Gait Assessment:

- Walk: Moderate to severe kyphosis at L2-3; uncomfortable stiff, slow walk, but not limping
- Trot: Did not trot

PROM – affected joints with a comparison to uninvolved joints: Mild tensing and wincing on palpation of L2-4; RH MPL ¾; LH MPL 1/4

Neurological testing: Placement test mild delay; sciatic, patellar, and gastrocnemius reflexes weak bilateral; panniculus WNL

Pain Assessment (0-10) (using pain assessment scale from, Matthews, K.A., Pain assessment and general approach to management, Management of Pain, The Veterinary Clinics of North America, Small Animal Practice, July 2000, p. 729-755): 4/10

Assessment:

- Problems:
 - Subluxation of L2-3
 - Mild delay in placement tests bilateral
 - Weak sciatic, patellar, and gastrocnemius reflexes bilateral
 - Painful L2-3
- Goals: To maintain a comfortable quality of life without surgical intervention.

Treatment Plan:

- Home exercises:
 - No jumping, no stairs, no running
 - Keep as calm as possible
 - Ice L2-3 region for 20 mins q12hrs until further notice
- Medical management:
 - Continue all meds, and can increase Gabapentin to 100 mg q8hrs and Tramadol to 12.5 mg q8hrs if no sedation noted
- Other recommendations:
 - Start acupuncture next week
 - Start rehab strengthening exercises of core and back once pain better managed
- Start Laser Therapy 2 times per week for 3 weeks, then re-assess progress

Actual History of Treatment**Monday, July 31st, 2017 – 1st Visit**

- S: QAR. Owner notes that at the end of 12 hours Molly is hunching and painful. Owner is restricting activity.
- O:
 - Treatments:
 - Companion Laser – Treatment 1 of 6 – Delivered 900 J to L1-L4 region using small contact head at 3 W; 30 J/cm²
 - Owner education: Stressed the severity of condition, and Molly may need back surgery if her neurological status declines. Owner is aware of this, and if Molly progresses, owner will pursue humane euthanasia.
 - Home plan:
 - Continue all medications at this time
 - No jumping, no stairs, no running
 - Keep as calm as possible

- Ice L2-3 region for 20 mins q12hrs until further notice
 - Program within hospital: None
 - Measurable outcomes:
 - Weight: 8.8 lbs
 - BCS: 2.5/9
 - Goniometry:
 - Left hind: Hock 155/30; Stifle 165/25; Hip 180/35
 - Right hind: Hock 160/28; Stifle 170/30; Hip 180/40
 - Thigh circumference:
 - LH Thigh Circumference: 4 cm
 - RH Thigh circumference: 4 cm
 - Observation of gait pattern, function, etc: Mild tensing and wincing on palpation of L2-4; RH MPL ¾; LH MPL ¼. Placement test mild delay; sciatic, patellar, and gastrocnemius reflexes weak bilateral; panniculus WNL
- Assessment:
 - Progress:
 - None at this time.
 - Deficits remaining from initial plan:
 - No changes at this time.
- Remaining problems and goals:
 - Goals: To maintain a comfortable quality of life without surgical intervention.
 - Problems:
 - Subluxation of L2-3
 - Mild delay in placement tests bilateral
 - Weak sciatic, patellar, and gastrocnemius reflexes bilateral
 - Painful L2-3
- Plan:
 - Continue laser therapy 2 times per week for 3 weeks, and based on results will discuss more long-term plan.



Tuesday, August 1st, 2017 – 2nd Visit

- S: QAR. Molly is on Gabapentin 100 mg q8hrs and Carprofen 6.25 mg q12hrs.
- Q:
 - Treatments:
 - Companion Laser – Treatment 2 of 6 – Delivered 900 J to L1-L4 region using small contact head; 30 J/cm² with technician.
 - Owner education: No changes.
 - Home plan:
 - Continue all medications at this time
 - No jumping, no stairs, no running
 - Keep as calm as possible
 - Ice L2-3 region for 20 mins q12hrs until further notice
 - Program within hospital: Outpatient therapy at this time.
 - Measurable outcomes: None
 - Observation of gait pattern, function, etc: Not at this visit
- Assessment:
 - Progress:
 - None at this time.
 - Deficits remaining from initial plan:

- No changes at this time.
- Remaining problems and goals:
 - Goals: To maintain a comfortable quality of life without surgical intervention.
 - Problems:
 - Subluxation of L2-3
 - Mild delay in placement tests bilateral
 - Weak sciatic, patellar, and gastrocnemius reflexes bilateral
 - Painful L2-3
- Plan:
 - Continue laser therapy 2 times per week for 3 weeks, and based on results will discuss more long-term plan.

Tuesday, August 8th, 2017 – 3rd Visit

- S: QAR. Owner not restricting activity. Molly is moderately painful.
- O:
 - Treatments:
 - Companion Laser – Treatment 3 of 6 – Delivered 900 J to L1-L4 region using small contact head; 30 J/cm² with technician.
 - Owner education: No changes. However, stressed restriction.
 - Home plan:
 - Continue all medications at this time
 - No jumping, no stairs, no running
 - Keep as calm as possible
 - Ice L2-3 region for 20 mins q12hrs until further notice
 - Program within hospital: Outpatient therapy at this time.
 - Measurable outcomes: None
 - Observation of gait pattern, function, etc: Moderately painful on palpation of L2-4; kyphosis present.
- Assessment:
 - Progress:
 - None at this time. Possible decline due to lack of restriction.
 - Deficits remaining from initial plan:
 - No changes at this time.
- Remaining problems and goals:
 - Goals: To maintain a comfortable quality of life without surgical intervention.
 - Problems:
 - Subluxation of L2-3
 - Mild delay in placement tests bilateral
 - Weak sciatic, patellar, and gastrocnemius reflexes bilateral
 - Painful L2-3
- Plan:
 - Continue laser therapy 2 times per week for 3 weeks, and based on results will discuss more long-term plan.

Thursday, August 10th, 2017 – 4th Visit

- S: QAR
- O:
 - Treatments:
 - Companion Laser – Treatment 4 of 6 – Delivered 900 J to L1-L4 region using small contact head; 30 J/cm² with technician.

- Owner education: No changes.
- Home plan:
 - Continue all medications at this time; owner refilled Gabapentin
 - No jumping, no stairs, no running
 - Keep as calm as possible
 - Ice L2-3 region for 20 mins q12hrs until further notice
- Program within hospital: Outpatient therapy at this time.
- Measurable outcomes: None
- Observation of gait pattern, function, etc: No pain on palpation of lumbar spine; placement tests WNL on all 4 limbs; minimal kyphosis.
- Assessment:
 - Progress:
 - Appears more comfortable.
 - Deficits remaining from initial plan:
 - Subluxation of L2-3
 - Weak sciatic, patellar, and gastrocnemius reflexes bilateral
- Remaining problems and goals:
 - Goals: To maintain a comfortable quality of life without surgical intervention.
 - Problems:
 - Subluxation of L2-3
 - Weak sciatic, patellar, and gastrocnemius reflexes bilateral
- Plan:
 - Continue laser therapy 2 times per week for 3 weeks, and based on results will discuss more long-term plan.

Monday, August 14th, 2017 – 5th Visit

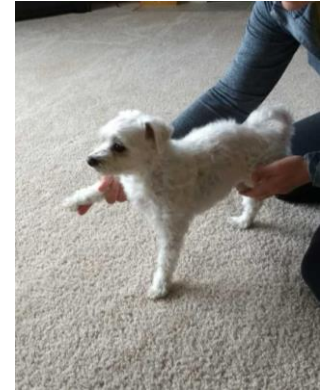
- S: QAR
- O:
 - Treatments:
 - Companion Laser – Treatment 5 of 6 – Delivered 900 J to L1-L4 region using small contact head; 30 J/cm² with technician.
 - Owner education: No changes.
 - Home plan:
 - Continue all medications at this time
 - No jumping, no stairs, no running
 - Keep as calm as possible
 - Ice L2-3 region for 20 mins q12hrs until further notice
 - Program within hospital: Outpatient therapy at this time.
 - Measurable outcomes: None
 - Observation of gait pattern, function, etc: No pain on palpation of lumbar spine; placement tests WNL on all 4 limbs; minimal kyphosis.
- Assessment:
 - Progress:
 - Appears more comfortable.
 - Deficits remaining from initial plan:
 - Subluxation of L2-3
 - Weak sciatic, patellar, and gastrocnemius reflexes bilateral
- Remaining problems and goals:
 - Goals: To maintain a comfortable quality of life without surgical intervention.
 - Problems:



- Subluxation of L2-3
 - Weak sciatic, patellar, and gastrocnemius reflexes bilateral
- Plan:
 - Continue laser therapy 2 times per week for 3 weeks, and based on results will discuss more long-term plan.

Thursday, August 17th, 2017 – 6th Visit

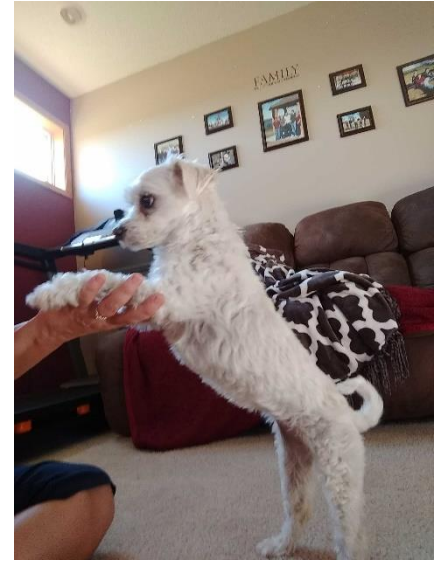
- S: QAR
- O:
 - Treatments:
 - Companion Laser – Treatment 6 of 6 – Delivered 900 J to L1-L4 region using small contact head; 30 J/cm² with technician.
 - Owner education: No changes.
 - Home plan:
 - Continue all medications at this time
 - No jumping, no stairs, no running; however, begin allowing more time loose without jumping
 - Keep as calm as possible
 - Home exercise plan:
 - Diagonal leg lifts: hold up opposite front and back limbs for 5 secs; repeat 3 times; perform daily.
 - Program within hospital: Outpatient therapy at this time.
 - Measurable outcomes: None
 - Observation of gait pattern, function, etc: No pain on palpation of lumbar spine; placement tests WNL on all 4 limbs; minimal kyphosis.
- Assessment:
 - Progress:
 - Appears more comfortable.
 - Deficits remaining from initial plan:
 - Subluxation of L2-3
 - Weak sciatic, patellar, and gastrocnemius reflexes bilateral
- Remaining problems and goals:
 - Goals: To maintain a comfortable quality of life without surgical intervention.
 - Problems:
 - Subluxation of L2-3
 - Weak sciatic, patellar, and gastrocnemius reflexes bilateral
- Plan:
 - Recheck in 2 weeks for more advanced strengthening activities.



Tuesday, August 29th, 2017 – 7th Visit

- S: QAR. Owner reports that Molly is doing great, and seems to be back to her old self. She is running and jumping on furniture on her own. Molly is on Gabapentin BID. Molly finished Carprofen this past week. Molly is eating and drinking well, with no vomiting, diarrhea, coughing, or sneezing. Per owner, Molly does not seem painful. Owner has been performing diagonal leg lifts when able, but Molly doesn't like to stand still.
- O:
 - Treatments:
 - None at this time
 - Owner education: Continued to stress importance of strengthening activities and not allowing to jump on and off of furniture, as it would risk further trauma.

- Home plan:
 - Continue all medications at this time
 - No jumping, no stairs, no running; however, begin allowing more time loose without jumping
 - Keep as calm as possible
- Home exercise plan:
 - Diagonal leg lifts: hold up opposite front and back limbs for 5 secs; repeat 3 times; perform daily.
 - Stand with hind limbs square, with back and core straight and forelimbs elevated ~4-6 inches (can use books to stand on) – stand for 30 secs, working up to 120 secs over 1 month.
- Program within hospital: Outpatient therapy at this time.
- Measurable outcomes:
 - BCS: 2.5/5
 - Weight: 8.6 lbs
- Observation of gait pattern, function, etc: Ambulatory x4, MPL RH $\frac{3}{4}$; MPL LH $\frac{1}{4}$; no pain response and panniculus normal on palpation of L2-3; mild kyphosis; placement test normal; push off test normal – strong bilateral hind limbs; did not test reflexes further
- Assessment:
 - Progress:
 - Appears more comfortable; returning to normal function.
 - Deficits remaining from initial plan:
 - Subluxation of L2-3
 - Weak sciatic, patellar, and gastrocnemius reflexes bilateral
- Remaining problems and goals:
 - Goals: To maintain a comfortable quality of life without surgical intervention.
 - Problems:
 - Subluxation of L2-3
 - Weak sciatic, patellar, and gastrocnemius reflexes bilateral
- Plan:
 - Recheck 1 month to evaluate kyphosis and comfort.



Tuesday, September 26th, 2017 – 8th Visit

- S: BAR. Molly appears happy and excited to be at clinic! Owner reports Moly is her normal happy self, running and playing. On Gabapentin once daily. Owner does exercises about 2-3 times per week. Molly is eating and drinking well, with no vomiting, diarrhea, coughing, or sneezing.
- O:
 - Treatments:
 - None at this time.
 - Owner education: Continued to stress importance of strengthening activities and not allowing to jump on and off of furniture, as it would risk further trauma.
 - Home plan:
 - Start to wean off of Gabapentin.
 - Start to return to a more normal lifestyle at home, however, I would still discourage jumping on and off furniture for the remained of Molly's life.
 - Home exercise plan:
 - Diagonal leg lifts: hold up opposite front and back limbs for 5 secs; repeat 3 times; perform 3-5 times per week.

- Stand with hind limbs square, with back and core straight and forelimbs elevated ~4-6 inches (can use books to stand on) – stand for 30 secs, working up to 120 secs over 1 month. Perform 3-5 times per week.
 - Back stretch – after standing on hindlimbs, stretch neck forward and hold for a few seconds.
 - Ok to return to normal walks.
 - Program within hospital: Outpatient therapy at this time.
 - Measurable outcomes:
 - BCS: 2.5/5
 - Weight: 8.7 lbs
 - Radiographs: Mild improvement in alignment of L2-3
 - Observation of gait pattern, function, etc: Ambulatory x4, MPL RH $\frac{3}{4}$; MPL LH $\frac{1}{4}$; no pain response and panniculus normal on palpation of L2-3; minimal kyphosis. Placement test normal; push off test normal – strong bilateral hind limbs; sciatic, patellar, and gastrocnemius reflexes WNL.
- Assessment:
 - Progress:
 - Appears more comfortable; returning to normal function.
 - Deficits remaining from initial plan:
 - Improved subluxation of L2-3
- Remaining problems and goals:
 - Goals: To maintain a comfortable quality of life without surgical intervention.
 - Problems:
 - Subluxation of L2-3
- Plan:
 - Recheck as needed
 - Continue exercises as directed

