Hepatocutaneous Syndrome (HCS) in a Maltese dog: A case report

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Superficial Necrolytic Dermatitis (SND) Clinical presentation

- Most common in older dogs: mean 10 years (4-16y)
- Male:Females = 3:1
- Predisposed breeds:
  - Maltese dog
  - Shetland Sheepdog
  - WHWT
  - Cocker Spaniels
  - Scottisch Terriers
- Also cats, black rhinoceros

Loftus et al., 2017
Nam et al., 2017
Fascetti and Delaney, 2012
Brenseke et al., 2011

Skin lesions

- 94% affected footpads
  - Marked crusting
  - Fissuring
  - Ulcerations
- Muco-cutaneous junctions, pressure points trunk and limbs
  - Erythema
  - Crusting
  - Exudation
  - Ulceration
  - Alopecia

Fascetti and Delaney, 2012

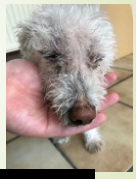
- II ary infections (often on feet)
  - Bacteria
  - Yeast (Malassezia, Candida)
  - Dermatophytes
- Lameness (II ary to footpad lesions)
- Inappetence
- Weight loss
- PU/PD when concurrent DM or significant liver dysfunction

Fascetti and Delaney, 2012

Maltese dog, MC, 9 years, 7,5 kg

- 19/04/2018: first consult at referring clinic: Suspected of hepatocutaneous syndrome





Diagnosis: Biochemistry

- Decreased plasma concentration amino acids
- AF ↑, ALT↑, serum albumin↓

Maltese Dog:

- AF 1421 U/l (<111)
- ALT 468 U/l(<70)
- AST 291U/l (<50)
- γ GT 36 (<9)
- NH3: 162 (0-98)µmol/l

Loftus et al., 2017
Fascetti and Delaney, 2012

Ultrasound abdomen
Biopsies skin and liver

"honeycomb" pattern liver
Nam et al., 2017

Biopsies concurrent with HCS
Brenseke et al., 2011

15/05/2018 control visit at referring clinic

- Erythema around anus much improved
- Hyperkeratosis around anus, at tarsi and footpads
- Diarrhea

→ Contact Ghent University

Ethiopathogenesis: Likely multifactorial

- Hypoaminoacidemia: if meassured all dogs with HCS
  - Plasma amino acid panel ≠ dogs with acute or chronic hepatitis
  - Likely directly contributing to cutaneous skin lesions
  - Increased hepatic catabolism of amino acids?
    - IV: bypass portal circulation → AA in peripheral tissue before hepatic intake

Loftus et al., 2017
Fascetti and Delaney, 2012

Therapy

- Treat II^{ary} infections
- Most effective palliative therapy: IV amino acids
  - Central vein
- Oral Nutritional Support
  - High quality protein diet + AA powder
  - Hyperalimentation with protein unless hepatic insufficiency
  - Zinc and essential FA supplementation: often recommended (initial improvement)
  - Egg Yolks (3-6/day)
- Renal or hepatic function compromised: HE or BUN ↑↑

Fascetti and Delaney, 2012
Brenseke et al., 2011

Diet of Maltese dog

- ✓ 200 grams of natural fresh meat
- ✓ 1,5 egg, boiled
- ✓ 5 LU NicNac cookies

- ➢ 0% calcium in natural fresh meat
- ➢ No detailed analysis

Advice Maltese dog: Home made diet (HMD)

Current bodyweight	7,5 kg	Energy requirement:	1948 kJ/day	430 kJ/kg^{0,75}	1,47 xRER	Calcium:	0,69 % DS
BCS (1-9; 5 - normal):	5 /9	Protein:	55,3 % DS	11,96 gCP/kgD,75		Phosphor:	0,45 % DS
Ideal bodyweight:	7,5 kg	Fat:	18,0 % DS	3,88 gCF/kgD,75		Ca/P:	1,51
		Carbohydrate:	22,8 % DS	Moisture:	61,1 %	Sodium:	0,22 %DS
		Fibre:	0,2 % DS	776 kJ ME/100g in the diet		Potassium:	0,42 %DS

Ingredients		Amount Daily	Amount 7 days	Remarks
		20,5 g/day		
Protein source	Egg	150 g	1,1 kg	1,5 egg boiled
	Codfish	50 g	0,4 kg	Cook for 10 min at 82°C
Carbohydrate source	White rice	20 g	0,1 kg	weigh-off before boiling, boil without salt
Supplements	Bulk Powder Proteinpowder	90,0 g	210 g	Mix with food and stir well before giving it to your dog:
	Calciumcarbonate, CaCO3	1,5 g	11 g	Available at pharmacist
	Dermacyne Zinc Enaphar	1,0 tablet	7,0 tablets	divide over 2 times a day
				To replace with a vitamin/mineral premix. After we have seen that your dog is doing well on this diet contact us to order the premix

- + IV amino acids but owner declined

- EPA+DHA: 125mg/kg$^{0.75}$ = 556,5 mg EPA+DHA Bauer J.E.,2011
- Zinc: 2 mgZn/kg$^{0.75}$ = 9,06 mg Zn (adequate/recommended)NRC 2006

Ingredients	EPA + DHA	Zinc
Egg:150 gram	0,43g/100g	1,05 mg/100g
Codfish: 50 gram	0,184/100g	0,45 mg/100g
White rice: 20 gram	/	1,02 mg/100g

USDA Food Composition Database

HMD:
- 737mg EPA+DHA
- 2 mg Zn → Zn supplement needed
- 11,96 gCP/kg^{0,75}

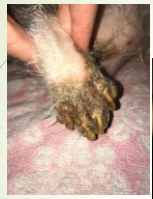
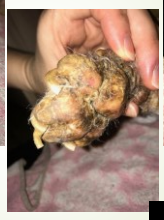
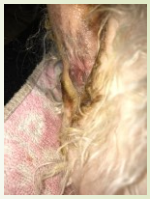
Prognosis

- Poor
- Survival time < 6 months
- 20% of dogs in a study ≥ 12 months with oral protein hyperalimentation and periodic parenteral IV amino acid infusions (Outerbridge et al.,2002)

Maltese dog:

Only protein hyperalimentation: survival time after diagnosis: 3,5 months

Fascetti and Delaney, 2012

Thanks to:

Owners of Maltese dog

Dechra
Veterinary Products

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