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GLYCOGENOSIS IN A CANINE, CASE REPORT

Gabriela Espino-Moreno

Unidad Académica de Medicina Veterinaria
y Zootecnia, Universidad Autónoma de
Zacatecas, Zacatecas, Zac
ORCID: 0009-0003-6436-5711

Juan Antonio Ramírez-Chequer

Unidad Académica de Medicina Veterinaria
y Zootecnia, Universidad Autónoma de
Zacatecas, Zacatecas, Zac
ORCID:0000-0001-6400-0390

Gustavo Muñoz Román

Unidad Académica de Medicina Veterinaria
y Zootecnia, Universidad Autónoma de
Zacatecas, Zacatecas, Zac., México
ORCID: 0009-0008-0270-805X

Victoria Elizabeth Castrellón-Ahumada

Unidad Académica de Medicina Veterinaria
y Zootecnia, Universidad Autónoma de
Zacatecas, Zacatecas, Zac
ORCID: 0000-0003-2581-2278

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Abstract: The objective of this work consisted in the evaluation of a canine with different findings in order to determine the cause of death, by means of laboratory tests and necropsy, obtaining macro and micro findings, which allowed us to determine the etiology of the clinical presentation. Glycogenosis is highly relevant in the dog, more than for its frequency of presentation, for being responsible for the clinical signology manifested including vomiting and chronic diarrhea, as it is also related to immunosuppression events poorly documented in this species.
(Glycogenosis, enteritis, diarrhea, vomiting)

INTRODUCTION

Digestive pathologies are one of the main reasons for consultation in the clinic of small species, unlike glycogenosis appears mainly in young dogs, without an apparent predisposition of sex or breed; however in this case it was an adult animal, the symptomatology is variable, being vomiting, diarrhea, weight loss and appetite alteration, as well as abdominal pain, typically manifesting as bilious character.

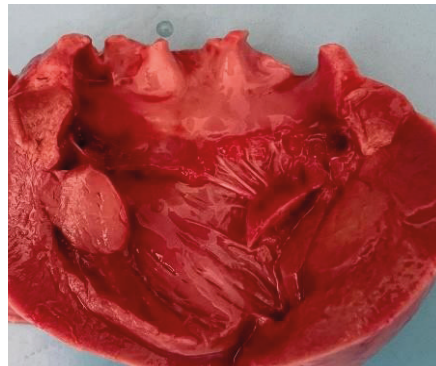
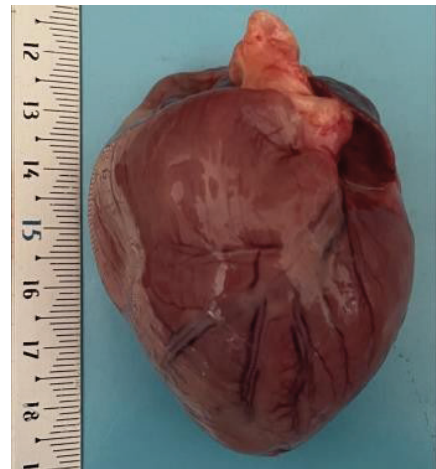
MEDICAL HISTORY

The 8-year-old Schnauzer canine. He arrived at the clinic with abdominal pain.

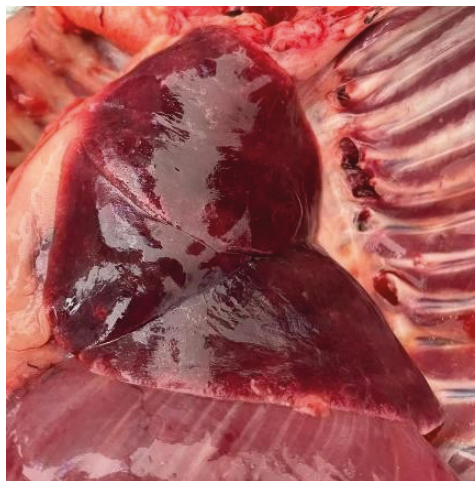
Macroscopic findings



CANINE CADAVER, PRESENTED JAUNDICE IN THE ORAL MUCOSA AND ABDOMINAL DISTENTION



- a) Congestion in coronary vessels.
- b) Left ventricular hypertrophy
- c) Endocardiosis in mitral valve
- d) Ecchymosis in papillary muscle



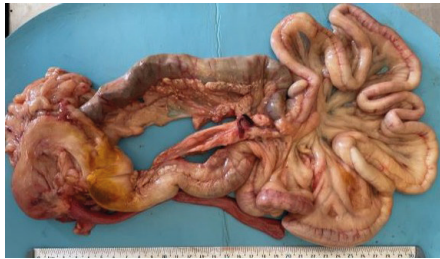
Lung with congestion and hemorrhage.



Moderate tracheal edema



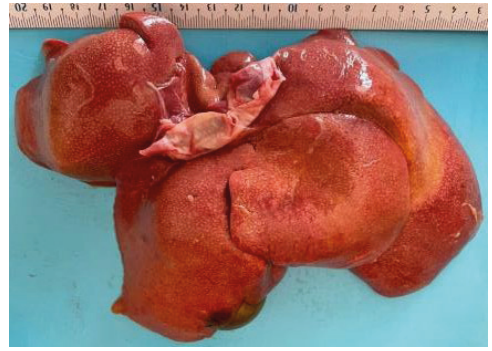
Abdominal cavity



Digestive tract. Whitish spots in mesenteric fat and pancreas.



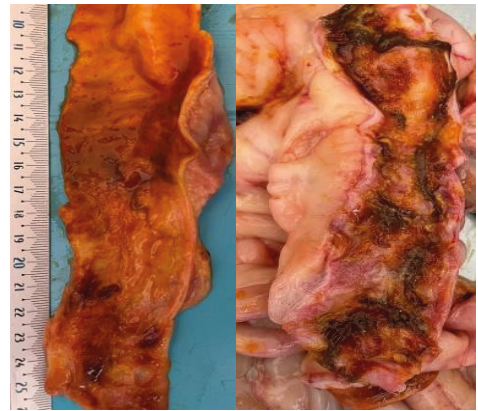
Liver. Yellowish color, with whitish spots of irregular shape and size.



Liver. Cut surface, with whitish spots that deepen.



Liver. Square in appearance and orange in color.



Intestine. Multizonal necrosis and ulcers, with presence of exudate.

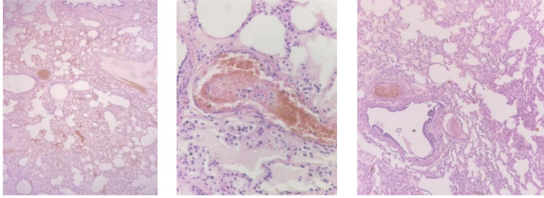


Kidneys. Moderate hyperemia.

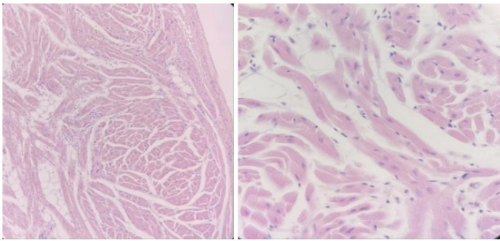


Spleen. Capsular contraction and fibrin on the surface.

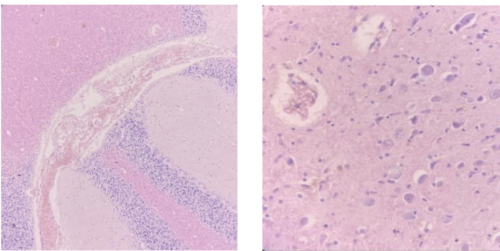
MICROSCOPIC FINDINGS



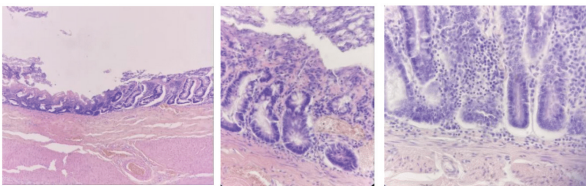
Lung. Moderate to severe congestion, severe edema, severe emphysema and atelectasis.



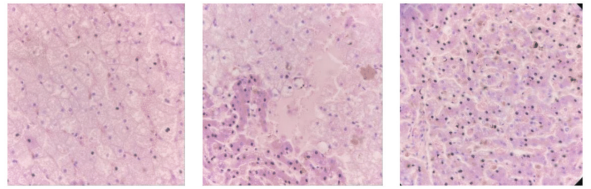
Heart. Dissociation and degeneration of muscle fibers.



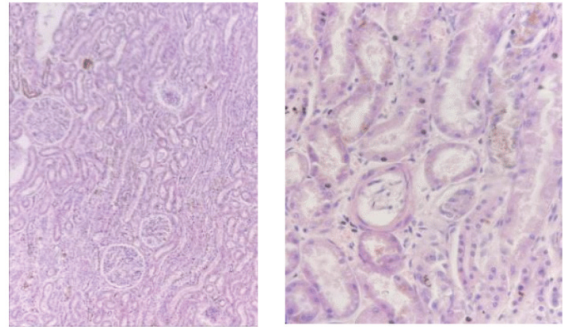
Encephalon. Severe congestion, moderate perivascular and perineuronal edema, gliosis and satellitosis, neuronal hyperchromasia.



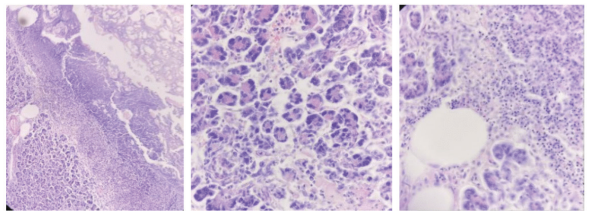
Intestine. Loss of villi, moderate congestion and plasmacytic infiltrate.



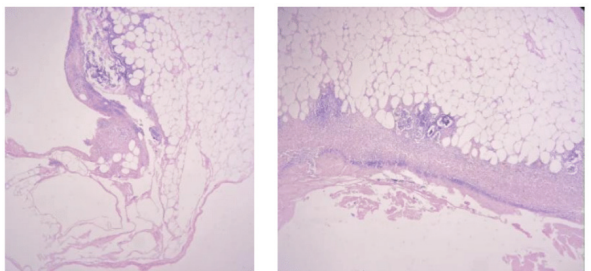
Hepatocytes with well-defined cell membrane, glycogen-laden and rounded nuclei displaced towards the periphery, large and clear cytoplasm.



Kidney. Severe degeneration of convoluted tubules.



Pancreas. Necrosis and degeneration of pancreatic acini, calcification and abundant lymphocytic infiltrate.



Mesentery. Abundant lymphocytic infiltrate, necrosis and calcification in the damaged areas.

COMPLEMENTARY TESTS



Laboratorio de Diagnóstico Veterinario
Zacatecas, México
Tel: 492-291-3430. E-mail: ladivetlaboratorio@gmail.com

FECHA: 07/02/2023 EDAD: 8 AÑOS ESPECIE Y RAZA: CANINO SCHNAUZER
PACIENTE: LUNA COLOR: GRIS
PROPIETARIO: RUBÉN GUZMÁN GARCÍA SEXO: HEMBRA
MÉDICO QUE LO INDICA: M.V.Z. GUSTAVO MUÑOZ ROMAN.

ESTUDIO: BIOMETRÍA HEMÁTICA.

MUESTRA: SANGRE VENOSA TOTAL CON EDTA.

CITOMETRÍA E= ELEVADO B= BAJO ↑ ↓

PARAMETRO	RESULTADO		UNIDADES		VALOR DE REFERENCIA
WBC	24.0	↑	X 10 ⁹ /L	E	6.0 - 16.0
LINFOCITOS	30.1	↑	%	E	12.0 - 30.0
MONOCITOS	6.3		%		2.0 - 9.0
GRANULOCITOS (NEUTRÓFILOS, EOSINÓFILOS, BASÓFILOS)	63.6		%		60.0 - 83.0
LINFOCITOS	7.2	↑	X 10 ⁹ /L	E	0.8 - 5.1
MONOCITOS	1.5		X 10 ⁹ /L		0.0 - 1.8
GRANULOCITOS (NEUTRÓFILOS, EOSINÓFILOS, BASÓFILOS)	15.3	↑	X 10 ⁹ /L	E	4.0 - 12.6
RBC	3.55	↓	X 10 ¹² /L	B	5.5 - 8.5
HGB	8.3	↓	g/dL	B	11.0 - 19.0
HCT	22.5	↓	%	B	39.0 - 56.0
MCV	63.5		fL		62.0 - 72.0
MCH	23.3		pg		20.0 - 25.0
MCHC	36.8		g/dL		30.0 - 38.0
RDW_CV	11.9		%		11.0 - 15.5
RDW_SD	28.3		fL		
PLT (PLAQUETAS)	463	↑	X 10 ⁹ /L	E	117.0 - 460.0
MPV	13.3	↑	fL	E	7.0 - 12.0
PDW	14.7		fL		
PCT	0.61		%		
P_LCR	33.2		%		
P_LCC	153		X 10 ⁹ /L		

ESTUDIO	RESULTADO		UNIDADES		VALOR DE REFERENCIA
SÓLIDOS TOTALES (PROTEÍNAS TOTALES)	89	↑	g/dL	E	55 - 75

OBSERVACIONES: NINGUNA.

VALIDÓ: Q.F.B. JOSÉ ARMANDO MURILLO DE SANTIAGO.

La muestra fue procesada en el equipo BC Vet2 (Impedancia y colorimetría). Las proteínas totales fueron determinadas en plasma mediante refractometría.

FECHA:	02/02/2023	EDAD:	8 AÑOS	ESPECIE Y RAZA:	CANINO NAUZER ESTÁN
PACIENTE:	LUNA	COLOR:	GRIS		
PROPIETARIO:	RUBÉN GUZMÁN GARCÍA.	SEXO:	HEMBRA		
MÉDICO QUE LO INDICA:	MVZ. GUSTAVO MUÑOZ ROMÁN.				
ESTUDIO: QUÍMICA SANGUÍNEA.					

MUESTRA: SUERO DE SANGRE VENOSA.

BIOQUÍMICA E= ELEVADO B= BAJO □ □

PARAMETRO	RESULTADO		UNIDADES	VALOR DE REFERENCIA
GLUCOSA	440.0	□	mg/dL	E 65.0 - 118.0
BUN	14.8		mg/dL	10.0 - 28.0
UREA	31.713		mg/dL	12.6 - 47.5
CREATININA	0.44	□	mg/dL	B 0.5 - 1.5
COLESTEROL TOTAL >	450.0	□	mg/dL	E 110.0 - 312.0
COLESTEROL DE ALTA DENSIDAD >	110.0		mg/dL	88.0 - 250.0
COLESTEROL DE BAJA DENSIDAD	340.0	□	mg/dL	E 22.0 - 80.0
TRIGLICÉRIDOS >	500.0	□	mg/dL	E 19.0 - 133.0
BILIRRUBINA TOTAL	1.6	□	mg/dL	E 0.1 - 0.8
BILIRRUBINA DIRECTA	0.6	□	mg/dL	E 0.1 - 0.4
BILIRRUBINA INDIRECTA	1.0	□	mg/dL	E 0.1 - 0.4
PROTEÍNAS TOTALES	7.9	□	g/dL	E 5.5 - 7.5
ALBÚMINA	4.4	□	g/dL	E 2.6 - 3.3
GLOBULINAS TOTALES	3.5		g/dL	2.7 - 4.4
RELACIÓN A/G	1.257		g/dL	0.78 - 1.46
ALANIN AMINOTRANSFERASA (ALT/GPT)	73.0		U/L	17.0 - 98.0
ASPARTATO AMINOTRANSFERASA (AST/GOT)	48.0	□	U/L	E 17.0 - 44.0
FOSFATASA ALCALINA (ALP) >	3500.0	□	U/L	E 20.0 - 156.0
LACTATO DESHIDROGENASA	742.0	□	U/L	E 13.0 - 100.0
CREATINA CINASA (CPK)	298.0	□	U/L	E 17.0 - 213.0
AMILASA	698.0		U/L	400.0 - 1100.0
LIPASA	362.0	□	U/L	E 13.0 - 200.0
ELECTRÓLITOS SÉRICOS				
Na ⁺ SODIO	136.0	□	mmol/L	B 141.0 - 153.0
K ⁺ POTASIO	4.8		mmol/L	3.8 - 5.3
Cl ⁻ CLORO	90.0	□	mmol/L	B 108.0 - 117.0
RELACIÓN Na ⁺ /K ⁺	28.33		mmol/L	27.0 - 40.0

OBSERVACIONES: < menor al límite de detección, > mayor al límite de detección.

SUERO LIPÉMICO.

VALIDÓ: Q.F.B. JOSÉ ARMANDO MURILLO DE SANTIAGO.

DIAGNOSTIC CRITERIA

Heart: Hypertrophy and endocardiosis.

Lungs: Congestion, presence of fibrin and severe edema.

Stomach: Ulcerative multifocal gastritis.

Kidney: Necrosis and degeneration in tubules.

Intestine: severe multizonal ulcerative catarrhal enteritis.

Peritoneum: Fibrinous peritonitis.

Mesentery: Metastatic calcification.

Spleen: Lymphoid septation and necrosis.

Liver: Glycogenosis .

Pancreas: Chronic pancreatitis.

Brain: perivascular and perineuronal edema, gliosis, satellitosis, hyperchromasia, severe congestion.

DIFFERENTIAL DIAGNOSES

glycogenosis, acute peritonitis, ulcerative catarrhal enteritis.

DISCUSSION

the diagnosis of this type of diseases is quite complex, since the classification of these patients is usually difficult. On the other hand, enteritis is an inflammation in the intestines that can present with great intensity and even become a chronic disease, which is very common in dogs; it begins to present with diarrhea. Glycogenosis could have contributed to this condition since it is reported that there is an immunosuppression in these patients.

In Mexico, the disease is very relevant, although there is no exact number of cases that have occurred since most of the time, these are not reported.

Currently, there are four types of glycogenosis reported in dogs. Among the most frequent forms are type I, II, III and VI. Type I-a glycogenosis is caused by deficiency

of the enzyme glucose-6-phosphate and type III glycogenosis by lack of hepatic glycogen debranching enzyme.

The same happens with enteritis which are e. granulomatous, e. eosinophilic, e. lymphoplasmacytic and acute infection; so, in this case, it was more likely associated with a chronic lymphoplasmacytic enteritis, for what was mentioned and observed previously.

CONCLUSION

During this case it was established that the canine had affections in organs such as liver, intestine and pancreas mainly. Metabolic diseases in companion animals represent an important area of veterinary practice that is rarely observed in detail and that leaves aside an accurate diagnosis, the combination with laboratory tests is indispensable.

SPECIAL THANKS TO UNDERGRADUATE STUDENTS GUADALUPE MONSERRAT RAMOS-CASTRELLÓN AND MIRIAM MACÍAS.

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