

## A MULTIDISCIPLINARY STUDY OF SWINE GASTROESOPHAGEAL ULCERS SYNDROME IN SLAUGHTER PIGS OF VENEZUELA

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**ABSTRACT:** We studied the stomach of 250 slaughter pigs (*Sus scrofa*), were from the slaughterhouse Turmero Frigorific, Aragua State Venezuela. None of these swine had shown any preceding clinical symptoms of gastrointestinal disease. From each stomach and esophagus, two sections of gastric tissue were taken from the cardial regions and a further two from the glandular mucosa (fundic regions); one of each type in 100 % ethanol and the others were fixed in 10 % formalin. The tissue samples fixed in formalin were processed by conventional histological techniques. Additionally, the special staining procedure of Wharthing-Starry was also carried out. Ureasa Test: the rapid ureasa test (commercial kit) were perform of gastric tissue. At necropsy the only an 87/250 ulcer crater involving the entire pars esophageal contains partially digested blood and gastric mucus. The stomach gastric distension caused by accumulated intragastric blood and mucus, 110/250 gastric ulceration and 53/250 gastritis. In the histopathological studies we found 87/250 esophageal erosions and inflammation 110/250 gastric ulceration, 53/250 gastritis and 40/250 atrophic gastritis and intestinal metaplasia. All samples studied presented lymphoid follicular hyperplasia and reactivity. Using the Wharthing Starry special stain, spiral shaped bacteria were found in 35/250 esophageal erosions, 22/250 gastric ulceration and 110/250 gastritis. Lymphocytic inflammatory infiltrates in the lamina propria of the accompanied follicles. The ulcers beds were devoid of epithelial cells and conceited of granulation tissue and hemorrhage. The nonglandular epithelium and inflammatory cell infiltrates and were distended by serous fluid accumulations. Urease activity was then demonstrated in these swine.

**KEYWORD:** gastritis, ulcers, swine, gastroesophageal.

## ESTUDIO MULTIDISCIPLINARIO DE SÍNDROME GASTROESOFAGICO ULCEROSO SUINO EN MATADEROS EN VENEZUELA

**RESUMEN:** Se estudió el estómago de 250 cerdos masacre (*Sus scrofa*), fueron desde el matadero Turmero frigoríficos, estado Aragua, Venezuela. Ninguno de estos cerdos mostraron ningún síntoma clínico previo de enfermedad gastrointestinal. De cada estómago y el esófago, dos secciones de tejido gástrico se tomaron de las regiones cardial y otras dos de las regiones glandulares mucosa fúndica, uno de cada tipo en el 100% de etanol y los otros fueron fijadas en formol al 10%. Las muestras de tejido fijado en formol, fueron procesados por las técnicas convencionales de histología. Además, el procedimiento especial de tinción Wharthing-Starry también se realizó. Ureasa prueba: la prueba de la ureasa (kit comercial) se realizan de tejido gástrico. En la necropsia sólo un cráter de la úlcera esofágica 87/250 participación de la pars entero contiene parcialmente digeridos sangre y moco gástrico. El estómago distensión gástrica causada por la sangre acumulada intragástrico y el moco, 110/250 úlceras gástricas y gastritis 53/250. En los estudios histopatológicos encontramos 87/250 erosiones del esófago y la inflamación 110/250 úlceras gástricas, gastritis y 53/250 40/250 gastritis autoinmune atrófica y metaplasia intestinal. Todas las muestras estudiadas presentaron hiperplasia linfoide folicular y reactividad. Uso de la Wharthing estrellada tinción especial, las bacterias en forma de espiral se 35/250 en erosiones del esófago, úlceras gástricas y 22/250 110/250 gastritis. Linfocítica infiltrados inflamatorios en la lámina propia acompañada de los folículos. Las camas úlceras carecían de las células epiteliales y de tejido de granulación y la hemorragia. El epitelio glandular e infiltrados inflamatorios de células y fuera dilatado por la acumulación de fluidos serosos. La actividad de la ureasa se demostró en estos cerdos.

**KEYWORD:** gastritis, úlceras gastroesofágica, porcino.

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## INTRODUCTION

Swine Gastroesophageal Ulcers Syndrome (GEUS) includes gastritis, erosions, ulcers and sudden death, is a common a serious problem in swine production; economic losses are substantial.

The factors of risk they are classified in: Infectious: Coronavirus, in systemic disease such salmonellosis (*Salmonella* spp. and Pestivirus). *Helicobacter* species and *Helicobacter heilmannii*; *Helicobacter* species, Candidatus *Helicobacter suis* (*Gastropirillum suis*) (1,2), *Candida* sp., immunosuppressive diseases (PCV2, PRRS and mycotoxins like aflatoxins specifically deoxynivalenol is commonly known as vomitoxin), parasites (*Hyostrongylus rubidus*, *Syphacia srivastari* and *Ascaris sum*). Dietary predisposing factors: cooper sulphate, iron, unsaturated fatty acids, carbohydrates. Low protein and fibers levels in the diet. Keratinization abnormal (diskeratosis or parakeratosis esophageal) by zinc deficiency. Foods of less of 3mm, stress-related. The objective of this multidisciplinary study of gastric ulcers was an approach to evaluate the prevalence Gastroesophageal ulcers in swine of Venezuela.

## MATERIALS & METHODS

We studied the stomach of 250 slaughter pigs (*Sus scrofa*), were from the slaughterhouse Turmero Frigorific, Aragua State Venezuela. None of these swine had shown any preceding clinical symptoms of gastrointestinal disease. From each stomach and esophagus, two sections of gastric tissue were taken from the cardial regions and a further two from the glandular mucosa (fundic regions); one of each type in 100 % ethanol and the others were fixed in 10 % formalin.

The tissue samples fixed in formalin were processed by conventional histological techniques. Additionally, the special staining procedure of Wharthing-Starry was also carried out.

Ureasa Test: the rapid ureasa test (commercial kit) were performed on gastric tissue.

## RESULTS

At necropsy the only an 87/250 ulcer crater involving the entire pars esophageal contains partially digested blood and gastric mucus. The stomach gastric distension caused by accumulated intragastric blood and mucus, 110/250 gastric ulceration and 53/250 gastritis. In the histopathological studies we found 87/250 esophageal erosions and inflammation 110/250 gastric ulceration, 53/250 gastritis and 40/250 atrophic gastritis and intestinal metaplasia. All samples studied presented lymphoid follicular hyperplasia and reactivity. Using the Wharthing Starry special stain, spiral shaped bacteria were found in 35/250 esophageal erosions, 22/250

gastric ulceration and 110/250 gastritis. Lymphocytic inflammatory infiltrates in the lamina propria of the accompanied follicles. The ulcers beds were devoid of epithelial cells and consisted of granulation tissue and hemorrhage. The nonglandular epithelium and inflammatory cell infiltrates and were distended by serous fluid accumulations.

Urease activity was then demonstrated in these swine.

## DISCUSSION

In this study, were observed 79 % severe ulceration of the pars esophageal and gastric mucosa. All samples studied presented urease activity and lymphoid follicular hyperplasia and reactivity. Were positive Wharthing Starry special stain 67% in the samples studied. Many factors including feeding, management, infectious, parasitic, toxic, and stress allow increased production of these stomach acids that act synergistically to produce gastric ulcers (1, 2, 3). In conclusion, we reported GEUS in slaughter pigs from Venezuela. Future studies GEUS should be special focus at evaluating multidisciplinary (nutrition, management, infectious, parasitic, toxic, and stress) and hazard analysis and critical control point in the management in the pig farm.

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