REDVET - Revista electrónica de Veterinaria - ISSN 1695-7504
Vol 23, No. 3 (2022)
http://www.veterinaria.org
Article Received: 25 March 2022; Revised: 15 April 2022; Accepted: 17 May 2022; Publication: 02 July 2022

Histological Communication and Interpersonal with the Gastro-Esophageal Gate for the Domperidone Effect in Rabbits (Motilium).

Ghassan A Dawood[1], Obead, W. F[2], Mahmood, H. B[3] *

[1*]Department of Anatomy and Histology\College of Veterinary Medicine\University of Kerbala.
[2]Department of Anatomy and Histology\College of Veterinary Medicine\University of Kerbala.
[3] Department of Anatomy and Histology\College of Veterinary Medicine\University of Kerbala.
***Corresponding Author: Email: Hussein.mahmmod@uokerbala.edu.iq**

Abstract

Objectives: The current study's focus, on the other hand, was to assess the major histological alterations that occurred in the esophageal sphincter muscle as a result of Domperidone usage. **Methods,** Ten healthy rabbits, and all experimental animals have been adapted in the animal home. For this investigation, animals were divided into two groups: control and treatment. The control group received distal water (0.5 ml/kg b.w) while the treatment group received Domperidone at a dose of 0.5 ml/kg b.w/orally administration twice daily for four weeks. **Results:** According to a recent study, frequent changes in the epithelial layer and lower esophageal sphincter muscle occur often, the mains variance has been noticed increase thickness of stratified squamous layer. Additionally, the tunica muscularis at the lower esophageal sphincter muscle in the experimental group was thicker and had thicker collagen layers than the control group.

Keywords: Histological changes, Domperidone, esophagus, rabbits

Introduction

Domperidone is a global dopaminergic inhibitor that acts on the peripheral dopamine receptors in the gastrointestinal to produce gastro kinetic effects **[1].** Domperidone has been found to be effective in the treatment of a variety of stomach dysmotility problems in clinical trials. Acute domperidone treatment enhanced solid and liquid stomach emptying rates in diabetic gastroporesis **[2,3]**, which was followed by clinical relief. **[4,5]**.

Similar beneficial effects were observed in anorexia nervosa patients with delayed gastric emptying **[6]**. Motilium has indeed been proven to be useful in the symptomatic treatment of individuals with postvagotomy gastroporesis **[7]**. In the most of patients who received the therapy, early satiety and epigastric discomfort enhanced. It's unclear what mechanism(s) domperidone uses to improve stomach emptying. In the dog, dopamine administration resulted in a levels reduction in intragastric pressure. **[8]**.

The dopaminergic inhibitors pimozide and metoclopramide reduced the inhibition activity. Domperidone has already been reported to inhibit dopamine-induced gastric relaxation in rats and to enhance antroduodenal coordination in the stomach of guinea pigs **[9]**. Dopamine's inhibitory action on overstimulated stomach longitudinal muscle is achieved by dopamine receptors on smooth muscle cells, according to recent in vitro research **[10]**

Butyrophenones are similar in appearance to domperidone. Antagonism of apomorphine- and dopamine-induced alterations in GI function is its most noteworthy impact in the GI tract. Gastric velocity is inhibited when dopaminergic receptors are stimulated, leading to a variety

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of gastro-intestinal tract symptoms such as postprandial bloating and discomfort, early satiety, nausea, and vomiting. **[11]**. Dopamine, through generating gastric relaxed and inhibiting stomach velocity, appears to play an essential physiologic impact in the control of gastric emptying, according to a growing body of data. Domperidone's impact on peripheral dopamine receptors counteracts this effect on stomach motility **[12]**.

The goal of this study was to offer a real knowledge of Domperidone's influence on gastritis and stenosis of the gastro-esophageal sphincter muscles, as well as pathological assessments and surgical methods, especially in pets.

Materials and methods:-

Ten healthy rabbits for both sex were chosen and divided in to two groups (control group and treatment group). Weight of animals (900-1200) g, breed locally, were used in this study. Control group taken distal water (0.5 ml/kg b.w), and treated group administrated by Domperidone (0.5 ml/kg b.w) oral administration by small plastic tube during 4 week for twice time daily **[13]**. The tissue specimens were sectioned from the gastric-esophageal gate region. The size of the specimens were taken about 0.5 cm, these samples were then kept for 48 hours in 10 % Neutral buffered formalin. Hematoxyline, Eosin and Masson's trichrome stain were used with routine histological technique to distinguish tissue components, connective tissue fibers collagen and muscles **[14]**.

Results and discussion

The current investigation reveals a variety of alterations in the esophagus and lower esophageal sphincter muscle. The Motilium had a tremendous influence in the tunica mucosa and muscularis, according to the current study. As a result, we noticed a thickness in the epithelial layer. In the control group, however, there was less thickness (Fig, 1).

The major outcome of this study was the effectiveness of Motilium for the gastric-esophageal gate, specifically in the thickness of the muscularis mucosa in this zone. In common states, As a result, according to this study, Motilium is one of the most effective drugs for treating the common reflexes caused by ulcers and stomach acidity. There are There's many evident events in the tunica muscularis; the tunica muscularis in the control group was (70) µm, but the tunica muscularis in the treatment group was (120) µm, and as a result of this condition, the tunica mucosa increased harder and tighter. These findings are similar to those of **[15]** who found Dopamine to have a high activity for the ulcerogenic impact (erosions) of repeated administration on the GIT mucosa (Fig, 2,3) In current study first registered, the Motilium caused thickness of tunica muscularis at contrast from the control group. Furthermore, there are more collagen fibers in the tunica mucosa and tunica muscularis, which are found between muscle fibers. As a result, the sphincter muscle was already able to inhibit any reflexes that may develop as a result of a high quantity of stomach acidity or a hiatal hernia. This finding comfortable with **[16]** who stated the Anti-filamentary drug for GIT caused increased in collagen muscle fibers in mucosa and tunica muscularis in gastrointestinal tract (Fig,4,5).

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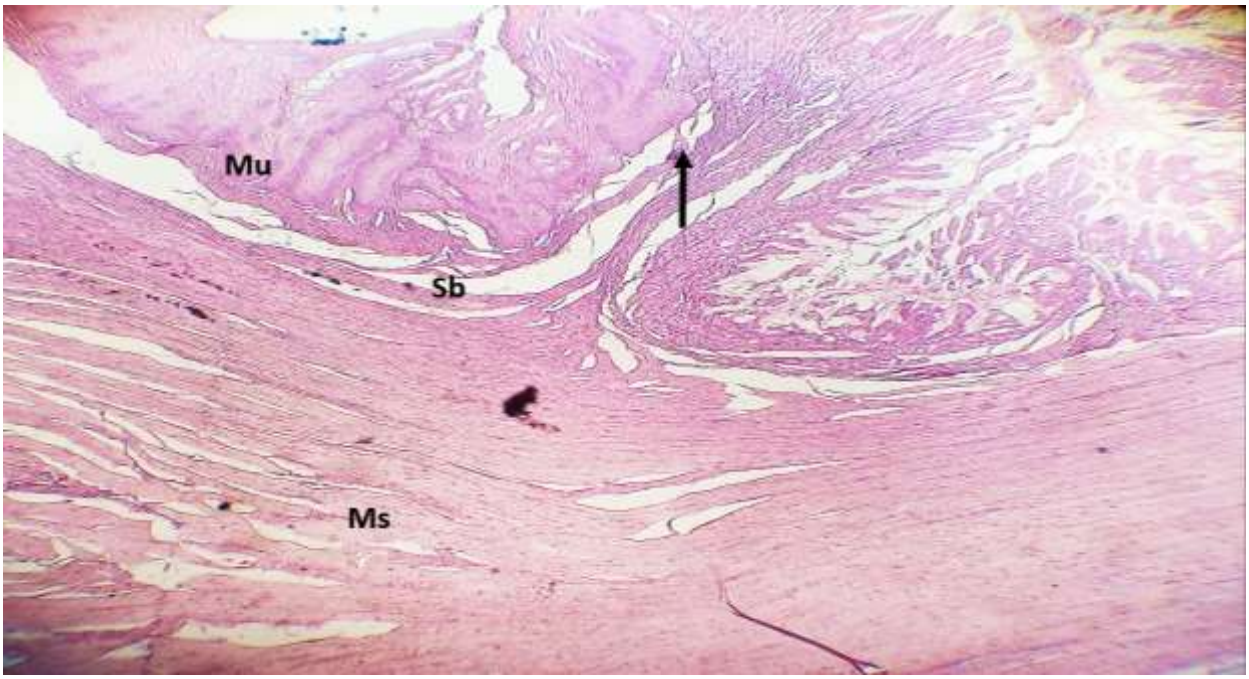
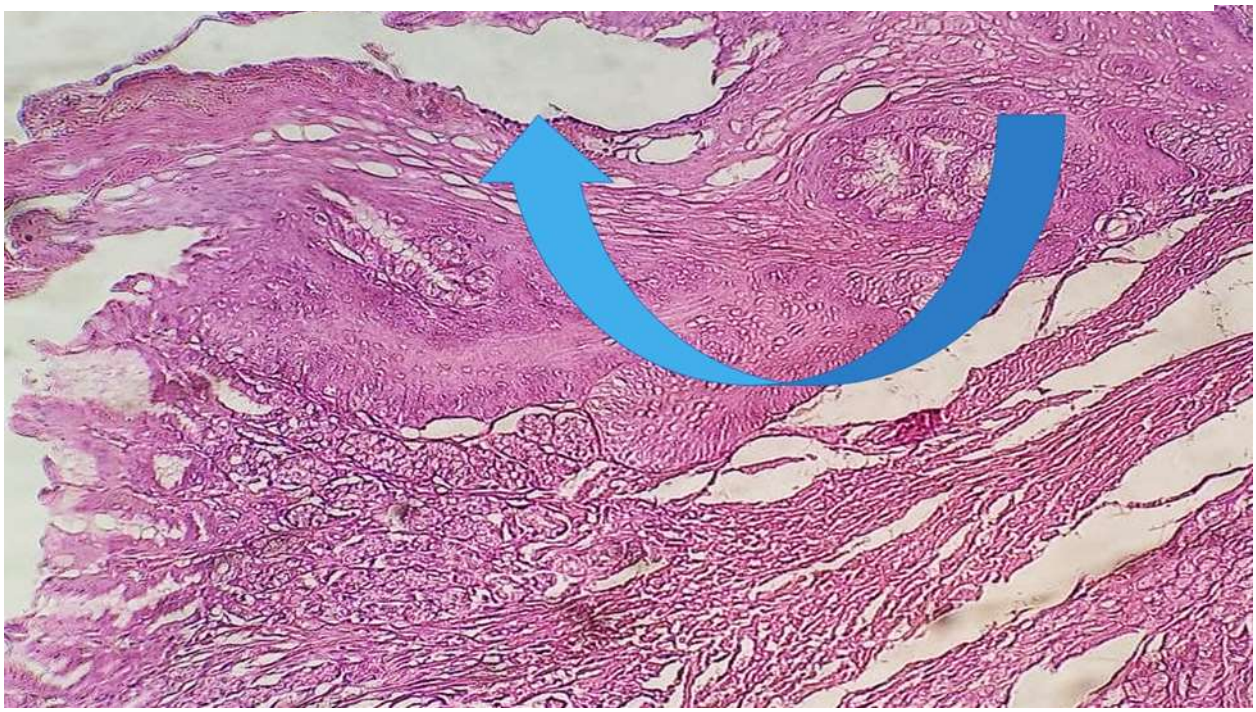


Figure, 1: Control group showing the Four basic layers in esophagus and Gastro-esophageal gate) (black arrow). H&E stain.10X.



Figure, 2: Control group showing the thickness of epithelial layer of esophgus (blue arrow) H&E stain.40X.

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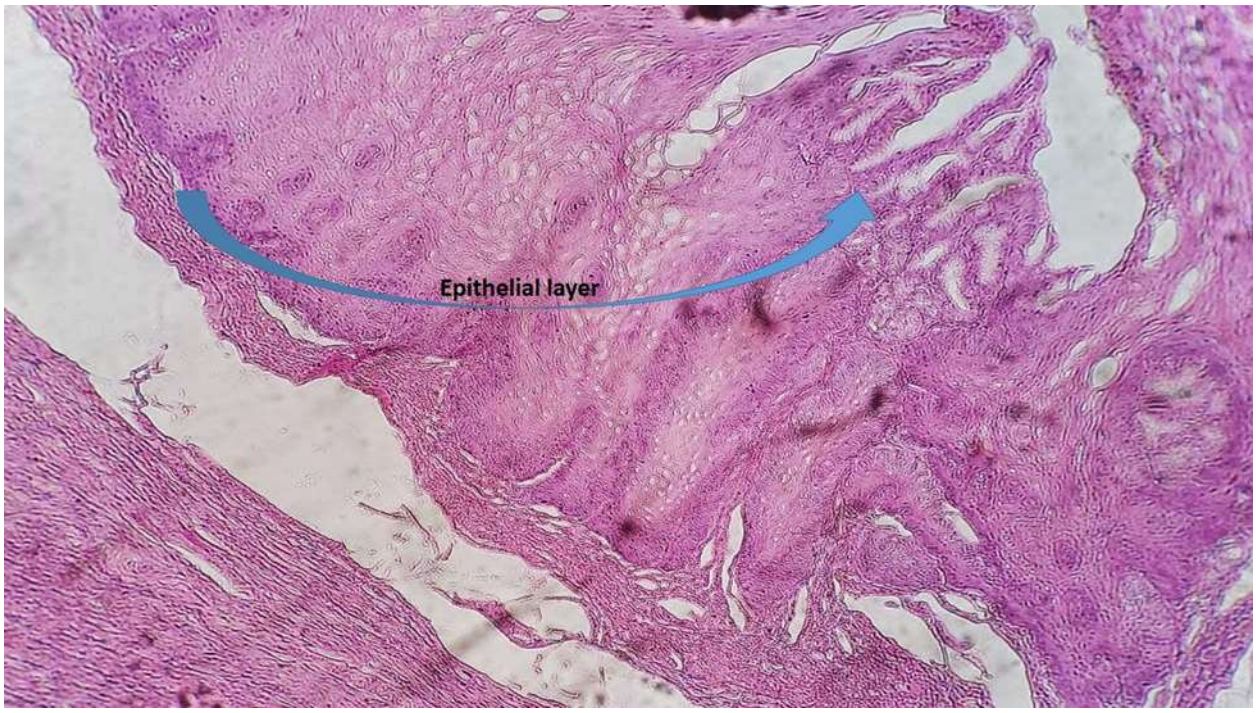

Figure, 3: Treatment group showing the increased in thickness of epithelial layer (blue arrow) H&E stain.40X.

Figure, 4: Control group showing the thinner layer of tunica muscularis (blue arrow). Masson trichrome stain.10X.

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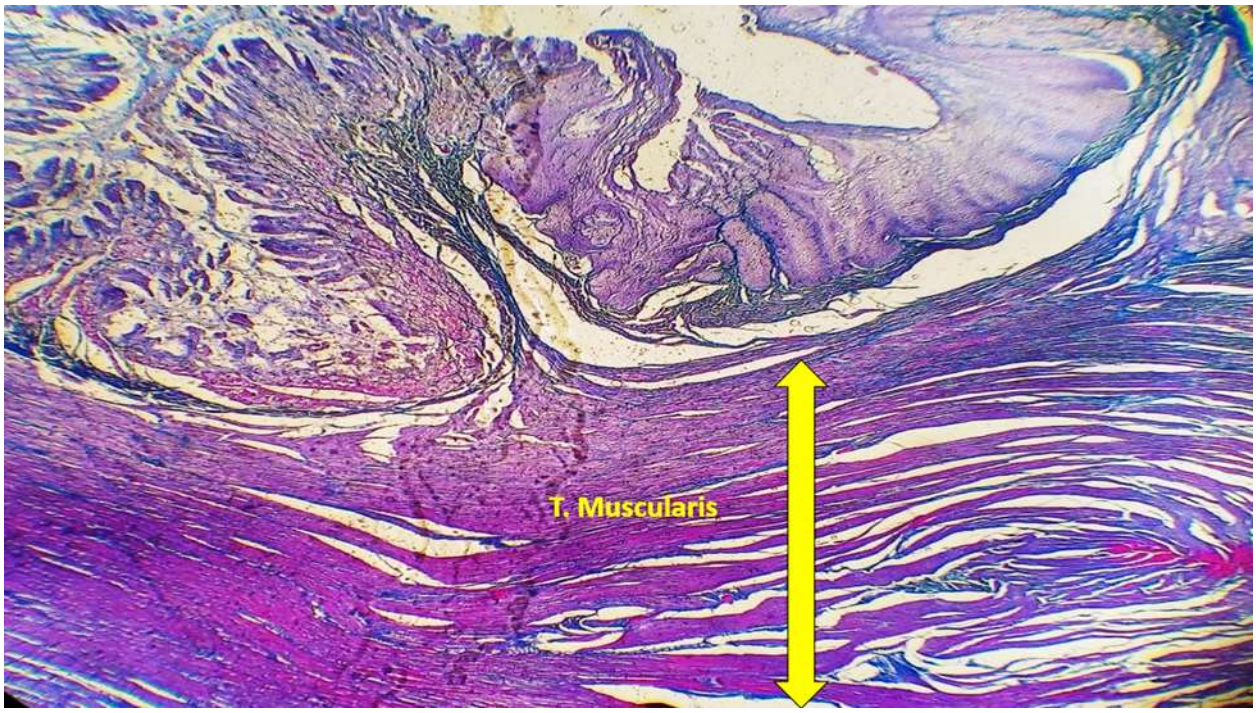

Figure, 5: Treatment group showing the large amount of collagen fibers and thicker in tunica muscularis (yellow arrow). Masson trichrome stain.10X.

Conclusions

The Domperidone had highly ability to increase Tunica muscularis and stenosis of gastric esophageal gate, this condition very important to Hiatal Hernia. Furthermore, following a four-week therapy with Domperidone, the number of collagen fibers in the lamina propria and submucosa increased, as increased the amount of collagen fibers between muscle layers.

ACKNOWLEDGEMENTS

We would like to thank the Faculty of Veterinary Medical Science of Kerbala University for their facilities during the research and suggestions to improve the manuscript.

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