THE UTILITY OF TRANS-ABDOMINAL ULTRASONOGRAPHY IN DIAGNOSIS OF GASTRITIS IN SYMPTOMATIC ADULT PATIENTS

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ABSTRACT:

Background: Gastritis is characterized by inflammation of the stomach and impacts approximately half of the global population. While it can be triggered by factors such as medication use, including NSAIDs (Nonsteroidal Anti-Inflammatory Drugs) and corticosteroids, viral infections, and severe stress, the most common cause remains infection by Helicobacter pylori.

Aim of the Work: to evaluate the utility of trans-abdominal ultrasound (US) in the diagnosis of gastritis and determine diagnostic parameters in known cases of gastritis who underwent endoscopy.

Patients and Methods: our study was a prospective study, that was conducted at Ain Shams University Hospitals over the course of seven months from April 2023 to October 2023. This study was conducted on 56 subjects divided equally into two study groups (confirmed cases of gastritis by endoscopy and healthy controls), The main source of data that was involved were the patients referred to the Radiology Department of Ain Shams University Hospitals for transabdominal ultrasonography after undergoing endoscopy in the Gastroenterology Unit of Internal Medicine Department of the same institution.

Results: The demographic data for the two groups (cases and controls) namely the age, sex, BMI, and smoking habits were recorded, and their sonographic parameters were compared. The recorded sonographic data included total antral wall thickness and its respective layers (musculosa, submucosa, mucosal layers), total gastric body wall thickness and its respective layers (musculosa, submucosa, and mucosal layers), presence of vascularity and lymph nodes. A statistically significant difference was observed in total antral wall thickness and the thickness of its respective layers, with a P value of <0.001. A statistically significant difference was also found in gastric body measurements, with P values of 0.005, 0.004, and 0.008 in total gastric body thickness, body musculosa, and body submucosal layers respectively, yet no statistically significant difference was observed in gastric body mucosal layer thickness. Positive vascularity on colour Doppler was noted in 8 out of 28 cases of gastritis with a P value of 0.004 and was not seen in any of our control patients, rendering it a specific parameter for diagnosis of gastric inflammation. The total wall thickness of the gastric antrum is a perfect diagnostic test for gastritis, as it has an AUC of 1.00 and a sensitivity and specificity of 100% at a cut-off value of 3.8 mm. Total wall thickness of the gastric body is also a good diagnostic test, but not as accurate as the antral measurements, as it has an AUC of 0.804 and a sensitivity and specificity of 78.57% and 85.71%, respectively, at a cut-off value of 2.9 mm.

Conclusion: Trans-abdominal gastric ultrasound can be used in the diagnosis of gastritis with the mentioned parameters and

characteristic features such as thickening of total and separate antral layers, thickening of total gastric body and its layers except for mucosal layer, with detected vascularity on colour Doppler, and is a valuable addition as a cost-effective, non-invasive, less time-consuming alternative compared to upper GI endoscopy, which is the current standard of diagnosis.

Keywords: *Trans-Abdominal, Ultrasonography, Gastritis, Gastric ultrasound.*

INTRODUCTION:

Gastritis is the condition describing inflammation of the gastric mucosa, which affects up to half of the world's population. Gastritis is triggered by many causes including long-term intake of some medications such as NSAIDs (Nonsteroidal Anti-Inflammatory Drugs) and Corticosteroids, some viral infections and extreme stress, etc. Yet, the most prevalent cause is Helicobacter pylori infection [1&2].

Gastritis is currently classified according to its temporal course, histological features, anatomic distribution, and underlying pathogenic processes into acute and chronic gastritis. If acute gastritis is not correctly managed, it will progress to chronic gastritis [2].

Helicobacter pylori has been implicated as the foremost cause of gastritis and peptic ulcer disease. Inflammation occurs most frequently in the antrum, with the submucosal layer often being a common site for H. pylori colonization. From a radiological perspective, the thickening of the gastric wall stands out as one of the fundamental indicators of gastric diseases [1].

Due to mucosal erosion caused by the proliferation of H pylori, the mucosal layer becomes thicker. Similarly, the submucosal layer as well as the mucosal layer, together with the muscularis mucosa, might achieve thickness corresponding to the extent and severity of inflammatory changes [1].

Upper gastrointestinal endoscopy (UGI) is usually performed to assess the symptoms of upper abdominal pain, which is an invasive, relatively expensive, and not easily feasible procedure [3].

Till nowadays the clinical applications of transabdominal gastric sonography have been limited. It has been used to evaluate gastric wall lesions and changes in gastric volume during accommodation and emptying of the stomach [4].

As a means of diagnosis, sonography serves as a non-invasive, safe, cost-effective, and practical imaging tool for the stomach. Radiologists should adopt a systematic and dynamic approach, being mindful of typical technical challenges to effectively identify crucial indicators for making a diagnosis [4].

As far as we know, there is limited information in radiologic literature regarding the use of sonography in diagnosing antral gastritis and its association with H. pylori infection. This prospective study aims to describe the sonographic observations related to gastritis by assessing gastric wall thickness in the gastric body and antrum. Additionally, it seeks to identify potential distinctions in the sonographic features between patients with gastritis who have H. pylori infection and those who do not [4].

AIM OF THE WORK:

To evaluate the utility of trans-abdominal ultrasound (US) in the diagnosis of gastritis and determine diagnostic parameters in known cases of acute gastritis who underwent endoscopy.

PATIENTS AND METHODS:

Type of Study:

Prospective study.

Study Setting:

The study was conducted at Ain Shams University Hospitals over the course of seven months from April 2023 to October 2023.

Source of Data:

The main source of data for this study was the patients referred to the Radiology Department of Ain Shams University Hospitals for transabdominal ultrasonography after undergoing endoscopy in the Gastroenterology Unit of Internal Medicine Department of the same institution.

Population size:

Fifty-six patients divided into 28 cases and 28 controls, met all inclusion and exclusion criteria, and were included in our study.

Study Population: the involved population followed these inclusion criteria:

Known cases of gastritis confirmed by upper GI endoscopy, age above 18 years old, and no gender predilection.

The exclusion criteria of our population included:

patients with known gastric malignancies, patients who underwent bariatric surgeries, and suspected cases of other causes of epigastric pain, including acute pancreatitis and cholecystitis.

Sampling Method:

Convenience sampling.

Study Tools and procedure:

Medical history:

Medical history was collected from our study population, demographic data was recorded, including age, sex, BMI, and smoking habits, and control cases were asked for and denied symptoms of gastritis including abdominal pain, dyspepsia, nausea, vomiting, and hematemesis.

Endoscopy:

Patients underwent endoscopy, confirming a diagnosis of gastritis, and biopsy was obtained during endoscopy for H. Pylori testing.

H. Pylori testing:

Biopsies were examined for H. pylori and its results were recorded.

Ultrasound:

detailed explanation of the ultrasound procedure was given and written consent from all enrolled patients in the study obtained. Patients were instructed to drink about 400 - 600 ml of water (enough to distend the stomach and provide an acoustic window yet not cause discomfort), and conventional ultrasonography was performed with a GE ultrasound system (LOGIQ P7) using a multifrequency linear probe (8–12 MHz) and curvilinear probe (3-5 MHz). Patients were directed to lie in a supine position during the examination. In this position, the probe was situated just below the xiphoid process, and its orientation was adjusted for optimal visualization of the stomach. The abdomen was then scanned by moving the probe laterally, from left to right, while keeping it perpendicular to the skin. Characteristics of the stomach, such as the laminar appearance of its wall, were observed. After completing the supine examination, patients were instructed to shift to the right lateral decubitus (RLD) position. This position facilitates the natural flow of stomach contents toward the antrum, enhancing the sensitivity of gastric ultrasound. In the RLD position, the abdomen was scanned again, identifying the stomach and its mural stratification, evaluating total gastric wall thickness, and measuring the thickness of individual layers (musculosa, submucosa, mucosa) in both gastric antrum

and body. Colour Doppler examination was also performed to determine the presence of appreciable vascularity, and secondary ultrasound findings including the presence of lymphadenopathy of draining lymph nodes were recorded if present.

P- value: level of significance. ***P>0.05:*** Non-significant (NS) and ***P< 0.05:*** Significant (S).

Ethical Considerations:

An informed written consent explaining the procedure details was obtained from all patients before inclusion in this study. The study started after the approval of the Research Ethical Committee with reference number (MS 186/2023), Faculty of Medicine, Ain Shams University. The privacy of participants and confidentiality of data was guaranteed during the various phases of the study. This paper has not been published or submitted for publication elsewhere.

RESULTS:

Demographic Data:

This study was conducted on 56 subjects divided equally into two study groups (confirmed cases of gastritis by endoscopy and healthy controls), Table (1) shows that 60.7% of the study group were females and 39.3% were males with mean age of the study group was 37.0 ± 14.59 years ranged from 18 to 65 years & BMI was 27.25 ± 3.44 and ranged from 20 to 34. Smoking habits were also recorded.

Table 1: Demographic data for the study group

		Mean / N	SD / %	Median (IQR)	Range
Age		37.00	14.59	34.5 (26 - 44.5)	(18 - 65)
BMI		27.25	3.44	27 (24 - 30)	(20 - 34)
Sex	Male	22	39.3%		
	Female	34	60.7%		
Smoking	Yes	18	32.2%		
	No	38	67.8%		
Group	Controls	28	50.0%		
	Cases	28	50.0%		

Ultrasound Findings:

Table (2) shows gastric wall thickness (antrum and body), mean of total thickness for antrum was 3.89 ± 0.83, musculosa was 1.44 ± 0.63, submucosal band was 0.96 ± 0.28 and mucosa was 1.5 ± 0.39, regarding mean of total thickness for body it was 2.93 ± 0.55, musculosa was 0.92 ± 0.36, submucosal band was 0.79 ± 0.31 and mucosa was 1.23 ± 0.24.

Table 2: Gastric wall thickness by U/S for the study group (cases and controls).

	Mean	SD	Median (IQR)	Range
Total gastric wall thickness Antrum	3.89	0.83	3.9 (3.15 - 4.7)	(2.5 - 5.4)
Musculosa	1.44	0.63	1.3 (0.9 - 1.9)	(0.6 - 2.9)
Submucosal band	0.96	0.28	0.9 (0.8 - 1.1)	(0.5 - 1.7)
Mucosa	1.50	0.39	1.55 (1.2 - 1.7)	(0.9 - 2.4)
Total gastric wall thickness body	2.93	0.55	2.85 (2.5 - 3.25)	(1.9 - 4.6)
Musculosa	0.92	0.36	0.85 (0.6 - 1.1)	(0.4 - 2)
Submucosal band	0.79	0.31	0.75 (0.65 - 0.9)	(0.3 - 2)
Mucosa	1.23	0.24	1.2 (1.1 - 1.35)	(0.7 - 1.9)

Table (3) shows vascularity and lymph node enlargement for the study group, only 14.3% of patients had vascularity and no one had LN enlargement.

Table 3: Vascularity and LN for the study group.

		N	%
Vascularity	No	48	85.7%
	Yes	8	14.3%
LN	No	56	100.0%
	Yes	0	0.0%

Table (4) shows pathological results after a biopsy from patients who had gastritis (28 patients) and 24 out of 28 (85.7 %) had positive results for H. Pylori.

Table 4: Pathology diagnosis of H. Pylori for cases group.

(N= 28)		N	%
H pylori	Positive	24	85.7%
	Negative	4	14.3%

Table (5) shows the relation between demographic data among the two-study group and there was no statistically significant difference between the two-study group in age, sex, smoking, or BMI as the P-value was >0.05.

Table 5: Relation between demographic data and two study groups.

		Group		Test of significance	
		Controls	Cases		
		Mean ± SD N (%)	Mean ± SD N (%)	p-Value	Significance
Age		38 ± 14.26	36 ± 15.1	0.612(T)	NS
BMI		27.71 ± 3.32	26.79 ± 3.55	0.317(T)	NS
Sex	Male	10 (35.71%)	12 (42.86%)	0.584(C)	NS
	Female	18 (64.29%)	16 (57.14%)		
Smoking	No	18 (64.3%)	20 (71.4%)	0.567(C)	NS
	Yes	10 (35.7%)	8 (28.6%)		

(T) Student t-test of significance. (C) Chi-Square test of significance.

Table (6) shows the relation between gastric wall thickness by U/S among two study groups and there was a statistically significant increase in gastric wall thickness within the gastritis group as P-value was <0.05, except at the mucosa of the body of the stomach there was no statistically significant difference.

Table 6: Relation between gastric wall thickness by U/S and two study groups.

	Group		Student t-test	
	Controls	Cases		
	Mean ± SD	Mean ± SD	p-Value	Significance
Total gastric wall thickness Antrum	3.16 ± 0.38	4.61 ± 0.41	<0.001	S
Musculosa	1.09 ± 0.34	1.79 ± 0.67	<0.001	S
Submucosal band	0.78 ± 0.19	1.14 ± 0.24	<0.001	S
Mucosa	1.26 ± 0.25	1.75 ± 0.34	<0.001	S
Total gastric wall thickness body	2.73 ± 0.66	3.13 ± 0.31	0.005	S
Musculosa	0.79 ± 0.35	1.06 ± 0.33	0.004	S
Submucosal band	0.69 ± 0.2	0.9 ± 0.35	0.008	S
Mucosa	1.25 ± 0.29	1.21 ± 0.19	0.516	NS

Table (7) shows the relation between vascularity among the two-study group and there was a statistically significant increase in number of patients with vascularity within the gastritis group as the P-value was <0.05.

Table 7: Relation between vascularity & LN in the two study groups.

		Group		Fisher's Exact test	
		Controls	Cases		
		N (%)	N (%)	p-Value	Sig.
Vascularity	No	28 (100%)	20 (71.43%)	0.004	S
	Yes	0 (0%)	8 (28.57%)		
LN	No	28 (100%)	28 (100%)		
	Yes	0 (0%)	0 (0%)		

Laboratory Data: Table (8) shows the relation between gastric wall thickness by U/S among two groups of H. Pylori and there was no statistically significant difference between the two groups in gastric wall thickness as the P-value was >0.05.

Table 8: Relation between gastric wall thickness by U/S and prevalence of H. Pylori.

	H. Pylori		Student t-test	
	Negative	Positive		
	Mean ± SD	Mean ± SD	p-Value	Sig.
Total gastric wall thickness Antrum	4.53 ± 0.41	4.64 ± 0.42	0.599	NS
Musculosa	1.6 ± 0.62	1.85 ± 0.69	0.436	NS
Submucosal band	1.1 ± 0	1.15 ± 0.27	0.361	NS
Mucosa	1.7 ± 0	1.76 ± 0.39	0.448	NS
Total gastric wall thickness body	3.13 ± 0.1	3.13 ± 0.35	0.944	NS
Musculosa	1.03 ± 0.1	1.06 ± 0.37	0.848	NS
Submucosal band	0.73 ± 0.05	0.95 ± 0.39	0.20	NS
Mucosa	1.33 ± 0.1	1.17 ± 0.2	0.066	NS

Table (9) shows the ROC curve for that study which measured the total gastric wall thickness by U/S. The table indicates that total gastric wall thickness of the antrum is a perfect diagnostic test for gastritis, as it has an AUC of 1.00 and a sensitivity and specificity of 100% at a cut-off value of 3.8 mm, while Total gastric wall thickness of the body is also a good diagnostic test, but not as accurate as the antrum, as it has an AUC of 0.804 and a sensitivity and specificity of 78.57% and 85.71%, respectively, at a cut-off value of 2.9 mm.

Table 9: Roc curve for total gastric wall thickness antrum & body by U/S to predict cases of gastritis.

Total gastric wall thickness	AUC	95% CI	Sig.	Cut-off value	Sensitivity	Specificity	+PV	-PV
Antrum	1.00	0.936 to 1.00	<0.001	>3.8	100	100	100	100
Body	0.804	0.676 to 0.898	<0.001	>2.9	78.57	85.71	84.6	80.0

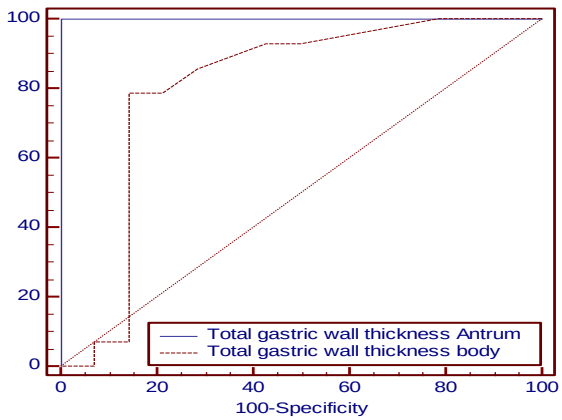

Figure 1: ROC curve

Illustrative Cases:

Case 1:

Clinical history: 38-year-old female patient, presenting with dyspepsia and hematemesis.

Laboratory results (H. Pylori testing): Positive

Endoscopic results: Gastritis with multiple pre-pyloric erosions.

Ultrasound Examination:

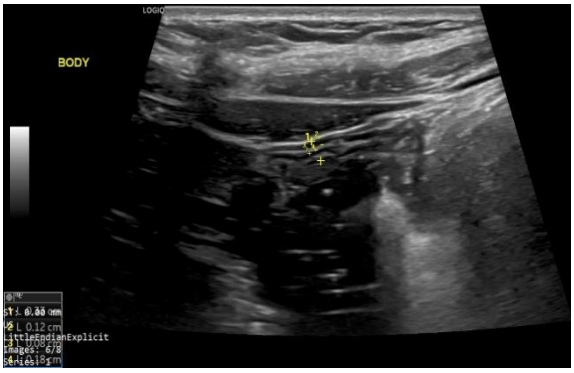

Figure 3: Image of the gastric body displaying stratification of its layers. It appears thickened along with the thickening of its layers sparing the mucosal layer which showed no statistically significant thickening, which is measured and labelled as follows: (1) total body wall thickness measuring 3.3 mm, (2) Musculosa measuring 1.2 mm, (3) submucosa measuring 0.8 mm, and (4) Mucosa measuring 1.3 mm.

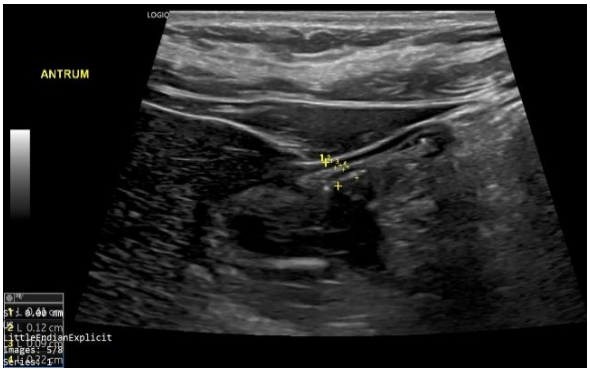

Figure 2: Image of the gastric antrum displaying stratification of its layers. It appears thickened as well as thickening of its individual layers, which are measured and labeled as follows: (1) total antral wall thickness measuring 4.4 mm, (2) Musculosa measuring 1.2 mm, (3) submucosa measuring 0.9 mm, and (4) Mucosa measuring 2.2 mm.

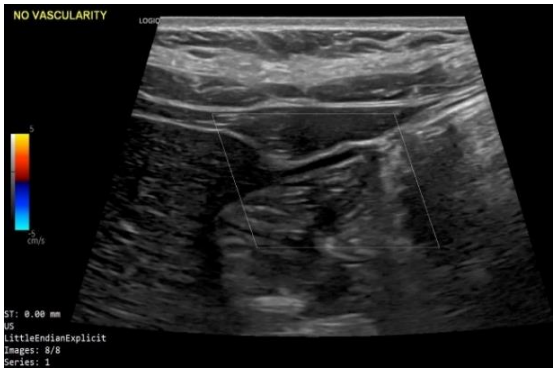

Figure 4: Showing negative vascularity on color Doppler.

Case 2:

Clinical history: 19-year-old female patient, presenting with dyspepsia and epigastric pain.

Laboratory results (H. Pylori testing): Positive

Endoscopic results: Pan-gastritis.

Ultrasound Examination:

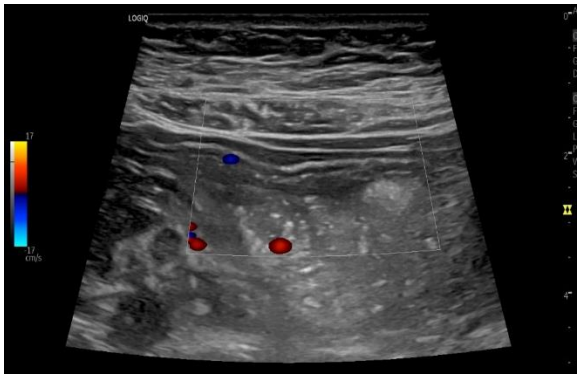

Figure 6: Showing positive vascularity in antrum on colour Doppler.

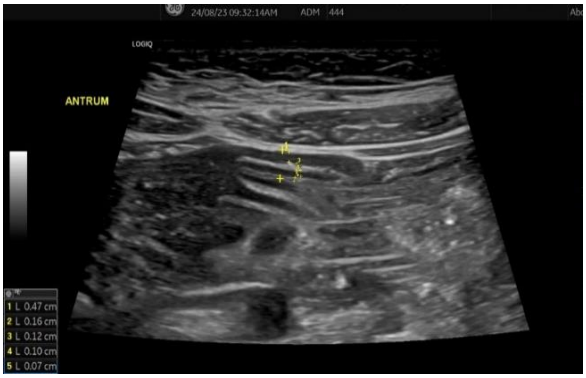

Figure 5: Image of the gastric antrum displaying stratification of its layers. It appears thickened with the thickening of its individual layers, which are measured and labelled as follows: (1) total antral wall thickness measuring 4.7 mm, (2) Musculosa measuring 1.6 mm, (3) submucosa measuring 1.2 mm, and (4) Mucosa measuring 1 mm.

Figure 8: Image of the gastric body displaying stratification of its layers. It appears thickened along with its layers sparing the mucosal layer which showed no statistically significant thickening, which is measured and labelled as follows: (1) total body wall thickness measuring 2.8 mm, (2) Musculosa measuring 0.6 mm, (3) submucosa measuring 0.9 mm, and (4) Mucosa measuring 1.3 mm.

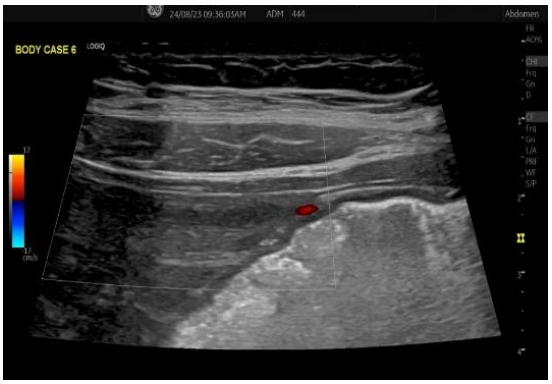

Figure 7: Showing gastric body with positive mural vascularity on colour Doppler, noted here in the submucosal layer.

DISCUSSION:

Gastritis continues to pose a significant social and public health challenge in both developed and developing countries. This pathology arises from inflammation of the stomach, marked by symptoms such as epigastric pain, distention, and hematemesis. Clinical manifestations include nausea, vomiting, dull epigastric pain, a sense of fullness, and loss of appetite [5].

Due to the high incidence and impact of gastritis, our study work aims to explore alternative more convenient methods of its diagnosis, as the current standard of diagnosis is upper GI endoscopy, which is invasive,

expensive, and requires sedation which comes with its own set of limitations [6].

Our study aims to utilize ultrasound in the diagnosis of gastritis, owing to its numerous advantages, including but not limited to non-invasiveness, affordability, rapidity, and scarcity of complications [1].

The demographic data for the two groups (cases and controls) namely the age, sex, BMI, and smoking habits were recorded, and their sonographic parameters were compared.

The recorded sonographic data included total antral wall thickness and its respective layers (musculosa, submucosa, mucosal layer), total gastric body wall thickness and its respective layers (musculosa, submucosa, and mucosal layers), presence of vascularity and lymph nodes.

The groups had no significant differences in the recorded parameters concerning age, sex, BMI, and smoking habits. This is in concordance with what *Cakmakci et al.* have found [4].

A statistically significant difference was observed in total antral and wall thicknesses and the thickness of their respective layers, with a P value of <0.001.

A statistically significant difference was also found in gastric body measurements, with P values of 0.005, 0.004, and 0.008 in total gastric body thickness, body musculosa, and body submucosal layers respectively, yet no statistically significant difference was observed in gastric body mucosal layer thickness which could be explained due to presence of mucosal erosions and ulcerations.

Jadhav et al. found a statistically significant difference in the antral submucosal layer and total antral thickness, which was consistent with our results. *Jadhav et al.* also noted statistically significant differences in the antral mucosal layer thickness as did our results, yet they did not record separate measurements for gastric body thickness and its distinct layers [1].

Cakmakci et al. recorded measurements of total antral thickness and antral musculosa, finding statistically significant differences between gastritis patients and the control group with a P value of >0.001 which is consistent with our results [4].

Laboratory testing for H. pylori revealed positive results for 24 out of our 28 cases of gastritis, yet no statistically significant difference was seen in their ultrasound parameters in comparison to the H. pylori-negative gastritis patient. This is opposed to *Cakmakci et al.* who found statistically significant results between H. pylori positive and negative groups with a P value of <0.001 [4].

Positive vascularity on color Doppler was noted in 8 out of 28 cases of gastritis with a P value of 0.004 and was not seen in any of our control patients, rendering it a specific parameter for establishing gastric wall inflammation. Limited studies were found regarding this parameter.

The ROC curve for our study was plotted, and as seen in Table (9), indicates that the total gastric wall thickness of the antrum is a perfect diagnostic test for gastritis, as it has an AUC of 1.00 and a sensitivity and specificity of 100% at a cut-off value of 3.8 mm. Total gastric wall thickness of the body is also a good diagnostic test, but not as accurate as the antral measurements, as it has an AUC of 0.804 and a sensitivity and specificity of 78.57% and 85.71%, respectively, at a cut-off value of 2.9 mm.

This agrees with *Jadhav et al.* who found gastric antral measurement to be an excellent non-invasive modality for the detection of gastritis and could be used as a screening method owing to its aforementioned advantages [1].

Tongdee et al. determined normal gastric antrum to measure 5.68 +/- 2.13 mm, keeping into consideration the different modalities they used (MSCT), and *Martínez Pérez et al.*

found normal gastric wall thickness to measure up to 6 mm by transabdominal ultrasound, yet they did not specify the state of gastric distension [7&8].

Larsen et al. determined the normal gastric wall thickness by endoscopic ultrasound to be 3.27 ± 0.42 mm, which agrees with our study [9].

There is notable variation in determining the normal gastric wall thickness and subsequently normal upper limit, owing to the variable thickness of different parts of the stomach, as well as its state of distension which could greatly affect its mural thickness and subsequent measurements.

While upper GI endoscopy is an indispensable tool for confirmation of gastritis and obtaining biopsies, if necessary, gastric ultrasound is an untapped potential of imaging in our daily practice. This could greatly influence how we approach the diagnosis of gastritis among PUD (peptic ulcer disease), and possibly further gastric pathologies.

This study has been exposed to some limitations. The main one is the limited sample size especially concerning the control group; therefore, we recommend further studies to achieve more reliable parameters.

Another existing limitation is that ultrasound is operator-dependent, and therefore findings/ measurements may vary depending on the operator's expertise.

Further limitations also exist regarding patient habitus and gaseous distension, which may hinder proper ultrasound evaluation. This can be overcome to some extent by proper patient preparation and applying compression.

In summary, ultrasound is deemed the safest imaging modality, and our goal is to employ it for gastritis diagnosis, minimizing the need for unnecessary endoscopic examinations whenever feasible. Various parameters outlined in this study, such as total antral wall thickness and its layers, along with total gastric body wall thickness, as well as detected gastric wall vascularity, can serve as indicative ultrasound parameters for diagnosing gastritis. While confirmation and biopsy still require upper GI endoscopy, ultrasound has proven to be a valuable tool for initial diagnosis, helping to minimize unwarranted interventions.

Conclusion:

Trans-abdominal gastric ultrasound can be used in the diagnosis of gastritis with the mentioned parameters and characteristic features such as thickening of total and separate antral layers, thickening of total gastric body and its layers except for mucosal layer, with detected vascularity on colour Doppler, and is a valuable addition as a cost-effective, non-invasive, less time-consuming alternative compared to upper GI endoscopy, which is the current standard of diagnosis.

Conflicts of Interest:

There are no conflicts of interest.

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This study had no funding from any resource.

Authors' contributions:

SRR: main idea, data analysis and revised the manuscript.

NMH: Edited, reviewed, prepared and follow up the manuscript.

AAA: collect patients and clinical data.

HMW: study design, follow-up of patients and collected clinical data.

All authors have read and approved the manuscript.

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فائدة التصوير بالموجات فوق الصوتية عبر البطن لتشخيص التهاب المعدة في المرضى البالغين الذين يعانون من أعراض

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خلفية : التهاب المعدة هو نوع من التهاب المعدة يتميز بالتهاب الغشاء المخاطي في المعدة، ويؤثر على ما يقرب من نصف سكان العالم .في حين أنه يمكن أن يحدث بسبب عوامل مثل استخدام الأدوية، بما في ذلك مضادات الالتهاب غير الستيرويدية والكورتيكوستيرويدات، والالتهابات الفيروسية، والإجهاد الشديد، فإن السبب الأكثر شيوعا لا يزال العدوى عن طريق هيليكوباكتر بيلوري.

الهدف من العمل : تقييم فائدة الموجات فوق الصوتية عبر البطن في تشخيص التهاب المعدة وتحديد المعلمات التشخيصية في الحالات المعروفة من التهاب المعدة الحاد الذين خضعوا للتنظير.

المرضى والطرق : كانت دراستنا العملية دراسة مستقبلية، أجريت في مستشفيات جامعة عين شمس على مدار سبعة أشهر من أبريل 2023 إلى أكتوبر2023 . أجريت هذه الدراسة على 56 شخصا مقسمة بالتساوي إلى مجموعتين دراسيتين 28 حالات مؤكدة من التهاب المعدة عن طريق التنظير و28 ضوابط صحية، وكان المصدر الرئيسي للبيانات التي تم تضمينها هو المرضى المحالين إلى قسم الأشعة بمستشفيات جامعة عين شمس للتصوير بالموجات فوق الصوتية عبر البطن بعد خضوعهم للتنظير في وحدة أمراض الجهاز الهضمي بقسم الطب الباطني في نفس المؤسسة.

النتائج : تم تسجيل البيانات الديموغرافية للمجموعتين (الحالات والضوابط) وهي العمر والجنس ومؤشر كتلة الجسم وعادات التدخين، ومقارنة المعلمات بالموجات فوق الصوتية .تضمنت بيانات التصوير بالموجات فوق الصوتية المسجلة إجمالي سمك الجدار الغاري والطبقات الخاصة به (العضلات، تحت المخاطية، الطبقة المخاطية)، إجمالي سمك جدار جسم المعدة والطبقات الخاصة به (العضلات ، تحت المخاطية ، والطبقات المخاطية)، وجود الأوعية الدموية والغدد الليمفاوية .لوحظ اختلاف ذو دلالة إحصائية في إجمالي سمك الغار والجدار وسمك الطبقات الخاصة به، بقيمة .P <0.001 كما تم العثور على فرق ذو دلالة إحصائية في قياسات جسم المعدة، مع قيمة P من 0.005 و 0.004 و 0.008 في إجمالي سمك جسم المعدة وعضلات الجسم وطبقات تحت المخاطية للجسم على التوالي، ومع ذلك لم يلاحظ فرق ذو دلالة إحصائية في سمك الطبقة المخاطية لجسم المعدة. لوحظت الأوعية الدموية الإيجابية على دوبلر الملون في 8 من أصل 28 حالة من التهاب المعدة بقيمة P تبلغ 0.004 ولم يتم رؤيتها في أي من الضوابط الصحية لدينا، مما يجعلها علامة محددة لتشخيص التهاب المعدة .تم العثور على دراسات محدودة بخصوص هذه العلامة .إجمالي سمك جدار المعدة للغار هو اختبار تشخيصي مثالي لالتهاب المعدة، حيث يحتوي على AUC 1.00 وحساسية وخصوصية 100٪ بقيمة 3.8 مم .إجمالي سمك جدار المعدة في الجسم هو أيضا اختبار تشخيصي جيد، ولكنه ليس دقيقا مثل القياسات الغارية، حيث يحتوي على AUC 0.804 وحساسية وخصوصية 78.57٪ و85.71٪ على التوالي، بقيمة 2.9 مم.

الخلاصة : فائدة الموجات فوق الصوتية في المعدة عبر البطن في تشخيص التهاب المعدة مع المعلمات المذكورة والسمات المميزة مثل سماكة الطبقات الغارية والأوعية الدموية الإيجابية على دوبلر الملون في فحص الموجات فوق الصوتية التي توفر أدلة مفيدة في تشخيص التهاب المعدة، وهو إضافة قيمة كبديل رخيص وغير جراحي وأقل استهلاكا للوقت مقارنة بالتنظير الهضمي العلوي، وهو المعيار الحالي للتشخيص.