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RESEARCH ARTICLE

ALGORITHMIC APPROACH TO EVALUATE PATIENTS WITH CHRONIC UPPER ABDOMINAL PAIN

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Abstract

Introduction:- chronic upper abdominal pain, is the pain that persists for more than 3 months either continuously or intermittently. It is a common problem. There are at least 27 differential diagnoses in the middle upper abdomen, 14 differential diagnoses in the right upper abdomen, and 17 differential diagnoses in the left upper abdomen. Nearly all patients with chronic abdominal pain have had a prior medical evaluation that did not yield a diagnosis after history, examination, and basic testing.

Aim:- to assess the best diagnostic approach for the patient with chronic upper abdominal pain (whom has no leading signs or symptoms) starting from the history till more advanced investigations and to have an algorithm for this diagnosis.

Patients and methods:- This prospective study is conducted in the consultant clinic of the Department of Surgery of **Alkadhiya Teaching Hospital** in Baghdad, Iraq, between January 2007 and January 2013. It involves 1320 patients whom chosen by inclusion and exclusion criteria, and had full assessment by history, examination, investigations and then follow up for 6 months, for data input and analysis we use statistical social sciences using chi square.

Results:- it is significant that most of the patients are females, the higher incidence at 30-39 y old, most common site is middle upper abdomen and most common final diagnosis is gall bladder and biliary problems. There is significant relationship between the age groups and the differential diagnosis for patients with chronic upper abdominal pain. Most of the patients were diagnosed in first step of investigations. There is difference in incidence between males and females for each disease.

Conclusion:- Accurate history and examination can give clue about the diagnosis, but cannot give the final diagnosis. There is difference in differential diagnosis for each location of the pain. The diagnosis of the disease mostly is reached at simple investigation like ultrasound of the abdomen, and sometimes it need more specific investigations or interventional investigations. The gender differential diagnosis of chronic upper abdominal is the same unlike that of the lower abdominal pain which significantly varies. It is better to have algorithmic approach to diagnose patients with chronic upper abdominal pain.

Introduction:-

Chronic upper abdominal pain:-

The complaint of abdominal pain is probably one of the more common surgical complaints of patients attending both an outpatient clinic and also as an emergency at hospital. All the organs contained in the abdomen, pelvis and retro peritoneum can be the cause of abdominal pain. However, one must not forget that abdominal pain can also be caused by some acute medical problems (porphyria, diabetic ketoacidosis, etc.) in addition to both acute cardiac and pulmonary disorders (1). Abdominal pain can be a challenging complaint for both primary care and specialist physician because it is frequently a benign complaint, but it can also herald serious acute pathology. Abdominal pain is present on questioning of 75% of otherwise healthy adolescent students (2) and about half of all adults (3). Chronic abdominal pain can be described as: abdominal pain that comes and goes over weeks to months. (4) or can be said that; chronic abdominal pain persists for more than 3 months either continuously or intermittently. (5). About 2% of adults, predominantly women, have chronic abdominal pain(6). Nearly all patients with chronic abdominal pain have had a prior medical evaluation that did not yield a diagnosis after history, examination, and basic testing. Clinical examination alone infrequently provides firm diagnosis. Determining whether the pain is physiologic or functional can be difficult. Perhaps 10% of patients have an occult physiological illness; the remainders have a functional process. (5). From the large population of patients with benign causes of abdominal pain clinicians are responsible for trying to determine which patients can be safely observed or treated symptomatically and which require further investigation or specialist referral. This task is complicated by the fact that abdominal pain is often a nonspecific complaint that presents with other symptoms(7). Thus, the overall sensitivity and specificity of the history and physical examination in diagnosing the different causes of abdominal pain is poor(8), particularly for benign conditions(9,10). Often the location of the abdominal pain can provide an important clue as to its cause. At other times, abdominal pain may occur in unexpected patterns, and its cause is less obvious. Nonetheless, it is helpful to think about abdominal pain in terms of its location. (11)

Causes of chronic middle upper abdominal pain include:-

- | | | |
|---|------------------------------------|------------------------------|
| 1. abdominal wall strain | 9. gastroesophageal reflux disease | 18. non-Hogkin's lymphoma |
| 2. chronic pancreatitis | 10. heart attack | 19. pancreatic cancer |
| 3. colonic tumors | 11. hepatitis | 20. peptic ulcer disease |
| 4. duodenitis | 12. hiatal hernia | 21. pericarditis |
| 5. Epigastric pain syndrome(12) | 13. intermittent porphyria, | 22. pleurisy |
| 6. Functional abdominal pain syndrome(13) | 14. internal hernias | 23. psychiatric disorders |
| 7. gallbladder disease | 15. irritable bowel syndrome | 24. reflux esophagitis |
| 8. gastroenteritis | 16. liver cancer | 25. stomach diseases |
| | 17. mesenteric ischemia | 26. thoracic aortic aneurysm |
| | | 27. ulcerative coliti |

Causes of chronic right upper abdominal pain include:-

- | | | |
|--------------------------|---|----------------------|
| 1. abdominal wall strain | 7. hiatal hernia | 11. peptic ulcer |
| 2. Crohn's disease | 8. kidney stone ,infection and cancer | 12. pericarditis |
| 3. cholangitis | 9. liver abscess, cancer, hydatid cyst and hemangioma | 13. pleurisy |
| 4. colonic tumors | 10. pancreatic diseases | 14. stomach diseases |
| 5. gallbladder disease | | |
| 6. hepatitis | | |

Causes of chronic left upper abdominal pain include:-

- | | | |
|--------------------------|---------------------------------------|--|
| 1. abdominal wall strain | 8. irritable bowel syndrome | 14. splenic abscess, rupture spleen and splenomegaly |
| 2. colon cancer | 9. kidney stone ,infection and cancer | 15. stomach diseases |
| 3. constipation | 10. leukemia | 16. thoracic aortic aneurysm |
| 4. Crohn's disease | 11. lymphoma | 17. ulcerative colitis(4)(11)(14) |
| 5. diverticulitis | 12. pancreatic diseases | |
| 6. heart attack | 13. pleurisy | |
| 7. hiatal hernia | | |

Given what is known about the extent of abdominal pathology and the broad range of diagnostic testing available, there still remains a level of uncertainty when discharging the patient whose workup has been negative. An

algorithmic approach, which is directed by the location of the pain including a comprehensive history and physical as well as appropriate laboratory and radiographic tests, will allow for more accurate disposition and treatment.(15)

History: A full history includes pain's onset, duration, severity, location, quality and aggravating and relieving factors are principle characteristics to be noted (16). Gastrointestinal (GI) symptoms, including anorexia, nausea, vomiting, diarrhea, and constipation are helpful.(17)Past medical and surgical history should include current and recently added medications, especially antibiotics and NSAIDs, past hospitalizations, surgeries, diabetes, trauma, or other chronic conditions. A social history should also be obtained, including tobacco, alcohol, and recreational drug use. One also needs to consider occupation and living conditions as well as assess the psych-social mental status of a given patient. (15)About the chronic abdominal pain the severity of the pain is always the same mild abdominal pain or moderate abdominal pain. The character of the pain is cramping pain, burning pain, or pain that travels to the back. the pain may occurs with serious symptoms such as: fever ,vomiting ,black stools, blood in the stool , fainting , weight loss , edema ,jaundice , abdominal mass or organomegaly(4)(5).

Physical Examination: General Appearance can give the clinician some sense of the severity of pain. Patients who are unable to sit still are most likely experiencing visceral pain, whereas those who prefer to remain immobile most likely have peritoneal pathology. (18)Vital signs should be monitored continuously as subtle changes in temperature, blood pressure, respiratory rate, and pulse can indicate various pathophysiologic changes. In evaluating vital signs, consider factors such as age, medications, and concomitant medical conditions, which may alter normal processes.(15) An abdominal examination must always be part of a 'general' examination, but must specifically include the general appearance of the patient, including cachexia, anemia, pallor, cyanosis, jaundice, dehydration, fetor and pyrexia . The neck and chest should be examined next, looking especially for lymphadenopathy and signs of pulmonary disease, while examination of the cardiovascular system for vascular disease. The abdominal exam includes inspection, auscultation, and palpation. (1)Palpation reveals the most information and should be performed gently and beginning farthest away from the area of the most pain .Patients can assist with the exam by palpating with the clinician.(15)

Laboratory and Radiographic Tests: In general, simple tests (including urinalysis, CBC, liver tests, ESR, amylase, and lipase) should be done. Abnormalities in these tests or specific clinical findings mandate further testing, even if previous assessments have been negative .Specific tests depend on the findings but typically include ultrasonography, CT of the abdomen and pelvis with contrast, upper gastrointestinal endoscopy or colonoscopy, X-ray or stool testing. Magnetic resonance cholangiopancreatography (MRCP), ERCP ,and laparoscopy are rarely helpful in the absence of specific indications.(5) however ,after ruling out common diseases by careful investigations, many patients are still undiagnosed and represent a major diagnostic challenge to the surgeon.(19)

Aim of the study:-

To assess the best diagnostic approach for the patient with chronic upper abdominal pain (whom has no leading signs or symptoms) starting from the history till more advance investigations and to have an algorithm for this diagnosis.

Patients and methods:-

This prospective study is conducted in the consultant clinic of the Department of Surgery of **Alkadhiya Teaching Hospital** in Baghdad, Iraq, between January 2007 and January 2013.

It involves 1320 patients .who had chosen according conditions include:

1. Inclusion criteria:-
 - *Patient's complaint of upper abdominal pain more than one month duration.
2. Exclusion criteria:-
 - a. Patients less than 10 years old.
 - b. Patients with leading signs and symptoms :black stools, blood in the stool, weight loss, jaundice, abdominal mass or organomegaly.
 - c. Patients that had previous diagnosis: ischemic heart diseases, History of cancer.
 - d. Any patient lost during the management or during the follow up because of death or other causes.
3. History and examination of the patients was done in the clinic of the Department of Surgery.
4. Hematological, biochemistry investigations were done by same laboratory techniques.

5. Sonography was performed by the same radiology team using a diagnostic ultrasound imaging equipment (PHILIPS – HD-11XE) 5-7 MHz convex array probes.
6. MRI and CT scan was performed by the same radiology team.
7. Dividing the investigations into three steps and stopped when reach the diagnosis:-
 - I. Step 1 (simple tests include: blood tests , ECG , abdominal ultrasound , chest x-ray ; which are non invasive and available)
 - II. Step 2 (more specific tests include : CT scan of abdomen , abdominal MRI , colonoscopy , esophageogastroscopy, fine needle aspiration cytology ...etc which need specific indications)
 - III. Step 3 (diagnostic and may be therapeutic tests which needs preparation of the patients to the sedative or general anesthesia so it needs patient fitness include: ERCP , laparoscope)
8. Follow up the patients after the diagnosis and treatment to be sure about the diagnosis and response for the treatment. Which include regular visit of the patients to the clinic and/or telephone calls, for 6 months.
9. For data input and analysis we use statistical social sciences using chi square.

Results:-

This study include 1320 patients from 2007-2013. Those patients have chronic upper abdominal pain. The results include:

Age and gender Distribution:-

Most of the patients are females, 970 cases (73.48%) and the males are 350 cases (26.52%). Age distribution is demonstrated in the table (1)and the figure (1):

Table 1:- age distribution of patients with chronic upper abdominal pain..

Age group in years	10—19 y	20—29 y	30—39 y	40—49 y	>50 y	Total	Chi-square	P value
Number of cases	135	236	368	354	227	1320	142.8	<0.001
percentage	10.23%	17.88%	27.88%	26.82%	17.25%	100%		

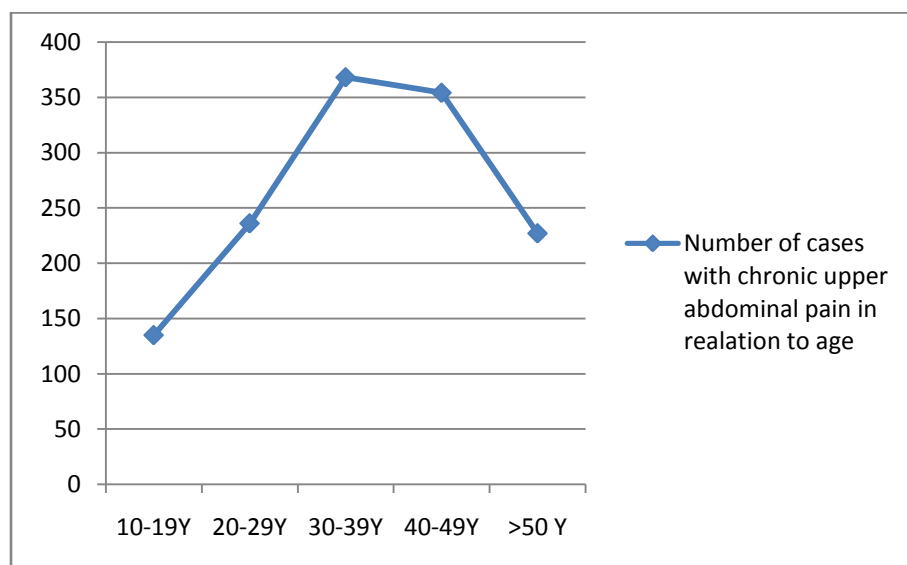


Figure (1) Number of cases with chronic upper abdominal pain in relation to age

location of chronic upper abdominal pain:-

According to this study the location of the pain depends on the patient description in the history, the results are : chronic middle upper abdominal pain 656 case(49.7%)chronic right upper abdominal pain 525 case (39.77%)chronic left upper abdominal pain 139 case(10.53%) . chi – square 238.4 . p value <0.001.

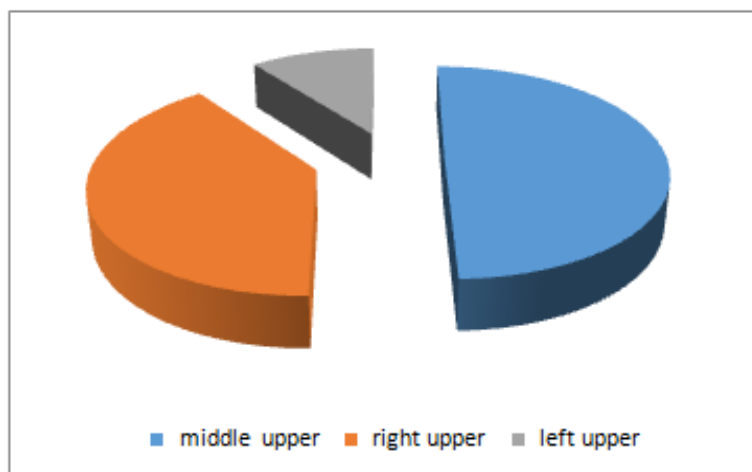


Figure 2:- location percentage of chronic upper abdominal pain

The final diagnosis results:-

The final diagnosis of the patients includes:-

- | | |
|--|---|
| 1. Achalasia: 7(0.53%) | 9. Irritable bowel syndrome: 166 (12.58%) |
| 2. Cardiac problems: 11 (0.83%) | 10. Liver tumor: 69 (5.23%) |
| 3. Chronic pancreatitis: 31 (2.35%) | 11. Mesenteric cyst: 8(0.61%) |
| 4. Colonic tumor: 21 (1.59%) | 12. Pancreatic tumor: 28 (2.12%) |
| 5. Gall bladder & CBD stones: 708 (53.64%) | 13. Peptic ulcer: 75 (5.68%) |
| 6. Gastric tumor: 31 (2.35%) | 14. Splenic abscess or cyst: 14(1.06%) |
| 7. Hiatus hernia: 14 (1.06%) | 15. Nonspecific: 62 (4.70%) |
| 8. Hydatid cyst of liver: 75 (5.68%) | |

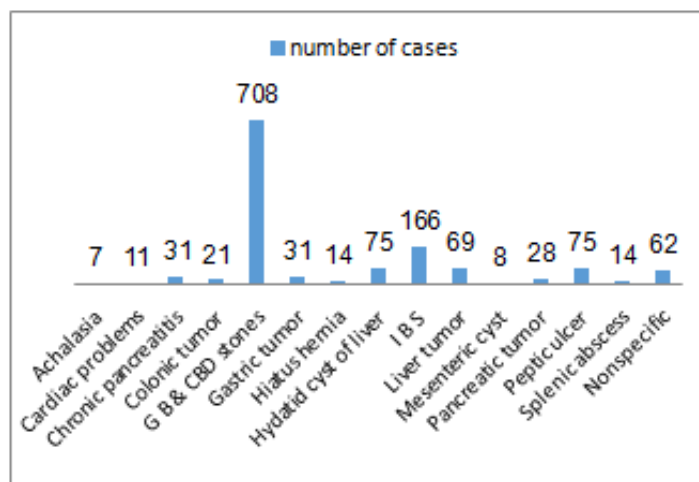


Figure 3:- number of cases for each diagnosis

Correlation between the age of the patients and the diagnosis:-

The results of the diagnosis that are obtained from each age group are ordered according to the number of cases which are shown in the table**.

Table 2:- Correlation between the age groups and the diseases ordered according number of cases for each disease.

Age group	1 st orde r	2 nd orde r	3 rd orde r	4 th orde r	5 th orde r	6 th orde r	7 th orde r	8 th orde r	9 th orde r	10 th orde r	11 th orde r	12 th orde r	13 th orde r	total
10-19Y	IBS 38	NO N 36	GBS 28	PU15	HCL 9	MC5	SA2	AC H 2						135
20-29Y	GBS 119	IBS 52	PU 20	NON 15	HCL 15	SA 5	HH4	MC3	AC H3					236
30-39Y	GBS 253	IBS 43	PU 24	HCL 19	HH7	NO N 6	CHP 5	PCA 5	SA 3	AC H 2	GT1			368
40-49Y	GBS 248	IBS 24	HCL 15	L T14	PU1 2	PT1 1	CHP 10	GT5	SA4	COT 4	HH 3	NO N 3	IHD 1	354
>50 Y	GBS 60	L T55	GT2 5	COT1 7	HCL 17	CHP 16	PT1 2	IHD 10	IBS 9	PU 4	NO N 2			227

**abbreviations: Achalasia/ACH. Cardiac problems/IHD. Chronic pancreatitis/CHP. Colonic tumor/COT. Gall bladder & CBD stones/GBS. Gastric tumor / GT. Hiatus hernia/ HH. Hydatid cyst of liver/HCL. Irritable bowel syndrome/IBS. Liver tumor / LT. Mesenteric cyst / MC. Pancreatic tumor / PT. Peptic ulcer / PU. Splenic abscess or cyst / SA. Nonspecific / NON.

The p value for peptic ulcer distribution for age groups 0.003, and for the hiatus hernia 0.016., which are significant. While for Achalasia 0.729, Hydatid cyst of the liver 0.443, Splenic abscess 0.531, which are not significant, while the rest of the diseases <0.001, which are highly significant.

Correlation between the history, the examination and the investigations with the diagnosis:

For each pain's location, the data collected and the method that gives the diagnosis is documented in the table shown below in tables (3) (4) (5):

Table 3:-**The results of diagnostic step for patients with middle upper abdominal pain (656 cases)

diagnosis	history	examination	1 st step investigation	2 nd step investigation	3 rd step investigation	P value
Achalasia 6	N	N	N	BA* & ED 6		<0.001
Cardiac problems 4	N	N	ECG* 3	CCA* 1		
Chronic pancreatitis 27	N	N	N	N	ERCP* 27	
Colonic tumor 8	N	N	N	ED & HP* 8		
G B & CBD stones 326	N	N	U/S* 259	MRCP* 40	LS & ERCP * 27	
Gastric tumor 20	N	N	N	ED & HP* 20		
Hiatus hernia 8	N	N	N	BA* & ED 8		
Hydatid cyst of liver 41	N	N	U/S & BI* 11	CT* 27	LS & HP* 3	
IBS 88	N	N	U/S * 73	CT* 15		
Liver tumor 20	N	N	N	HP & CT * 20		
Mesenteric cyst 8	N	N	N	CT* 5	LS* 3	
Pancreatic tumor 21	N	N	N	CT* 14	LS* 7	
Peptic ulcer 53	N	N	N	ED* 53		
Splenic abscess 0						
Nonspecific 26	N	N	N	N	N	
Total(percentage)	0	0	346(55%)	217(34%)	67(11%)	

**Abbreviations: N/nonspecific. BA/ Barium study. ED / Endoscopic study. ECG / Electrocardiogram. CCA/ Cardiac catheterization study. ERCP / Endoscopic retrograde cholangiopancreatography. MRCP/Magnetic resonance cholangiopancreatography. U/S / Ultrasonography. BI / blood investigations. HP / Histopathology study .LS / laparoscopic study .CT /Computerized tomography scan. GB / gall bladder. CBD / Common bile duct. IBS / irritable bowel syndrome. (*) / The step of diagnosis.

Table (4) ** The results of diagnostic step for patients with right upper abdominal pain (525 cases).

diagnosis	history	examination	1 st step investigation	2 nd step investigation	3 rd step investigation	P value
Achalasia 0						
Cardiac problems 0						
Chronic pancreatitis 2	N	N	N	N	ERCP* 2	
Colonic tumor 3	N	N	N	ED & HP* 3		
G B & CBD stones 382	N	N	U/S* 267	MRCP* 95	LS & ERCP * 20	
Gastric tumor 0						
Hiatus hernia 2	N	N	N	BA* &ED 2		
Hydatid cyst of liver 34	N	N	U/S & BI* 6	CT* 26	LS* 2	
I B S 27	N	N	U/S* 19	CT* 8		
Liver tumor 49	N	N	N	HP & CT * 49		
Mesenteric cyst 0						
Pancreatic tumor 5	N	N	N	CT* 3	LS* 2	
Peptic ulcer 5	N	N	N	ED* 5		
Splenic abscess 0						
Nonspecific 16	N	N	N	N	N	
Total(percentage)	0	0	292(57%)	191(38%)	26(5%)	<0.001

**Abbreviations: N/nonspecific. BA/ Barium study. ED / Endoscopic study. ECG / Electrocardiogram. CCA/ Cardiac catheterization study. ERCP / Endoscopic retrograde cholangiopancreatography. MRCP/Magnetic resonance cholangiopancreatography. U/S / Ultrasonography.BI / blood investigations. HP / Histopathology study .LS / laparoscopic study .CT /Computerized tomography scan. GB / gall bladder. CBD / Common bile duct. IBS / irritable bowel syndrome . (*) / The step of diagnosis.

Table (5) **The results of diagnostic step for patients with left upper abdominal pain (139 cases)

diagnosis	history	examination	1 st step investigation	2 nd step investigation	3 rd step investigation	P value
Achalasia 1	N	N	N	BA* &ED 1		
Cardiac problems 7	N	N	ECG* 5	CCA* 2		
Chronic pancreatitis 2	N	N	N	N	ERCP* 2	
Colonic tumor 10	N	N	N	ED & HP* 10		
G B & CBD stones 0						
Gastric tumor 11	N	N	N	ED & HP* 11		
Hiatus hernia 4	N	N	N	BA* &ED 4		
Hydatid cyst of liver 0						
I B S 51	N	N	U/S* 42	CT* 9		
Liver tumor 0						
Mesenteric cyst 0						
Pancreatic tumor 2	N	N	N	N	LS* 2	
Peptic ulcer 17	N	N	N	ED* 17		
Splenic abscess 14	N	N	N	CT* 10	LS * 4	
Nonspecific 20	N	N	N	N	N	
Total(percentage)	0	0	47(39%)	64(54%)	8(7%)	<0.001

**Abbreviations: N/nonspecific. BA/ Barium study. ED / Endoscopic study. ECG / Electrocardiogram. CCA/ Cardiac catheterization study. ERCP / Endoscopic retrograde cholangiopancreatography. MRCP/Magnetic resonance cholangiopancreatography. U/S / Ultrasonography. BI / blood investigations. HP / Histopathology study .LS / laparoscopic study .CT /Computerized tomography scan. GB / gall bladder. CBD / Common bile duct. IBS / irritable bowel syndrome. (*) / The step of diagnosis.

- Abdominal ultrasound is the diagnostic test for 682 cases of the total1320 cases(51.66%).

Correlation between the gender of the patients and the diagnosis:

The results of diagnosis for females and males are shown in the table (6).

Table(6)Correlation between the gender of the patients and the diagnosis.

The Disease	Number of cases	Number of female cases	Number of male cases	Chi- square	P value
Achalasia	7	5	2	0.57	0.449
Cardiac problems	11	4	7	0.82	0.366
Chronic pancreatitis	31	14	17	0.29	0.590
Colonic tumor	21	9	12	0.43	0.512
G B & CBD stones	708	614	94	381	<0.001
Gastric tumor	31	15	16	0.03	0.858
Hiatus hernia	14	11	3	4.57	0.032
Hydatid cyst of liver	75	51	24	9.72	0.002
I B S	166	108	58	15.1	<0.001
Liver tumor	69	36	33	0.13	0.718
Mesenteric cyst	8	3	5	0.13	0.723
Pancreatic tumor	28	12	16	0.57	0.449
Peptic ulcer	75	35	40	0.33	0.564
Splenic abscess	14	6	8	0.28	0.593
Nonspecific	62	47	15	16.52	<0.001
Total NO.	1320	970	350		
Percentage	100%	73.48%	26.52%	291	<0.001

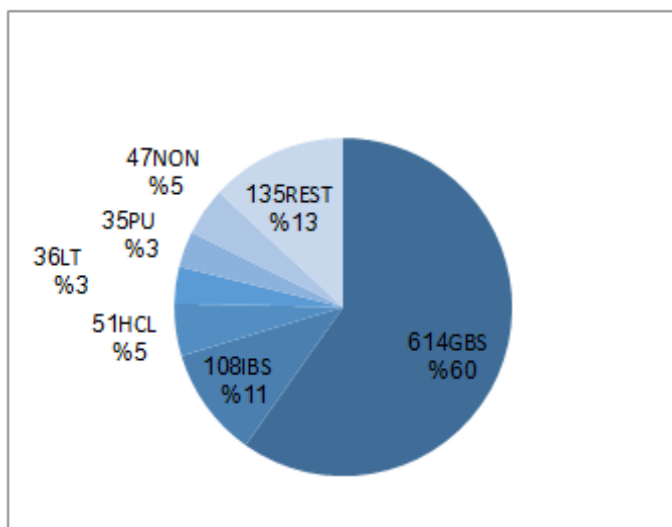


Figure (4) female distribution of diagnosis

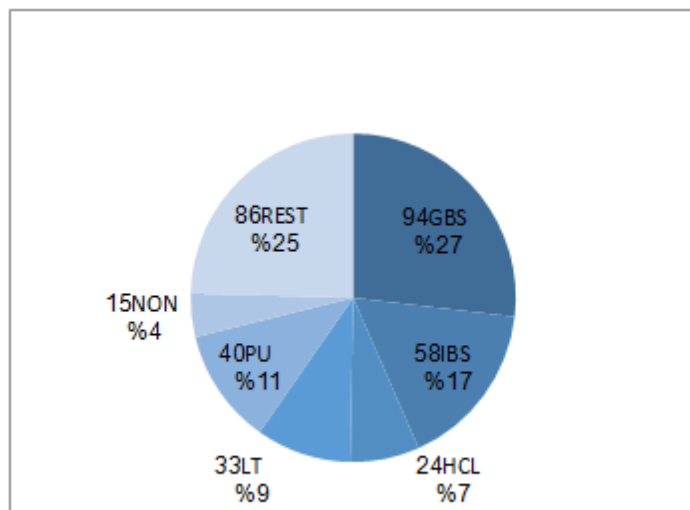


Figure (5) male distribution of diagnosis

Discussion:-

According to age distribution, it is significant that most of the cases with the chronic upper abdominal pain are between 30-49 years when the gall bladder and CBD problems, irritable bowel syndrome and peptic ulcer, are established and chronic heart and vascular problems, tumors to be appear, in addition to the presence of infection by hydatid cyst of the liver in these age groups(15,16).

By dividing the pain according to the abdominal locations that taken by history from the patient it is highly significant that most of the pain of the patients is in the middle upper area which include many differential diagnosis in comparison to both right and left areas. The second location is the right upper area. So even the location of the pain give clue about the diagnosis, it is not helpful alone. In other study, the epigastrium is the commonest site of pain in all conditions that cause upper abdominal pain" (20).

The results of diagnosis demonstrate that the most common cause of chronic upper abdominal pain is gallbladder and CBD problems (53%) because of the common incidence of having gallstones. Gallstones are the most common biliary pathology. It is estimated that gallstones are present in 10–15% of the adult population in the USA. In the UK, the prevalence of gallstones at the time of death is estimated to be 17% and may be increasing" (1). Gallstones may develop complications which are neglected till cause chronic abdominal pain. In other studies "Pain localized to the epigastrium is thought to occur more frequently in peptic ulcer than in non-ulcer dyspepsia, and uncommonly in cholelithiasis" (21)." 60% and 47% of patients with gall stones experienced pain in the epigastrium and right hypochondrium respectively" (22). Chronic liver diseases are not encountered in our study because they are used to have their check up visit in the GIT unit in our hospital once they are diagnosed by the physicians.

Correlating the age and the diagnosis is highly significant, showing that nonspecific diagnosis which may be due to abdominal wall strain, psychological problems or occult physiological illness are more common in younger age groups. Abdominal wall pain is common and frequently mistaken for visceral pain (23). Also it is highly significant that the IBS is more common in the age group 20-39y, while gall bladder and biliary problems is highly significant in age group 30-49y. The tumors (liver, colonic, gastric, and pancreatic) and cardiac problems are highly significant in age group >50 y. Chronic pancreatitis is highly significant more common in age group >40 y. It is significant that the hiatus hernia and the peptic ulcer are more in age group 20-39 y. In our study it is not significant that achalasia, hydatid cyst of the liver, and the splenic abscess are related to specific age group. Keeping in our mind that we are not facing pediatric age group because we did exclude them from the start of the study.

Correlating the history, examination and investigations with the diagnosis, according to each location, it is highly significant and it is unlikely to reach the diagnosis by the history and the examination alone, although this integration(history and examination) may give us clue about the diagnosis and how to go through the investigations. While the evaluation of chronic upper abdominal pain should follow the traditional sequence of history, physical examination, and special investigations, the medical history is often unhelpful in the diagnostic process "(24). Other studies consider the history has discriminative value but also the diagnosis ability is limited. Recent works suggest that the discriminative value of the history can be improved if it is collected and analyzed in a structured way with reference to an adequate database "(25)(26). Most of the diagnosis established at the first step of investigations which include mainly abdominal ultrasound, ECG, and blood investigations. Abdominal ultrasound is very important, simple, noninvasive, available investigation that help in diagnosis of the most common disease which is gallbladder and CBD problems and it helps to diagnose the IBS and hydatid cyst of the liver. The second step of investigations is the second most common step of diagnosis which include mainly abdominal CT scan, endoscopy, barium study, cytology, and histology which is very important to diagnose most of differential diagnosis other than gallbladder and heart problems. When all the history, examination and the investigations are nonspecific the case consider to has nonspecific disorder, the nonspecific diagnosis has 4.70% incidence while in other studies it is more.. Tumors are diagnosed essentially histopathology study except CA pancreas which can be diagnosed by CT scan findings. According to the location of pain it is clear that achalasia, chronic pancreatitis hiatus hernia, mesenteric cyst and pancreatic tumor has pain location mainly middle upper abdominal, 2) the cardiac problems, splenic abscess mainly left upper abdominal, 3) colonic tumor, peptic ulcer, gastric tumor mainly middle and left upper abdominal, 4) gall bladder problems, Hydatid cyst of liver, and liver tumor are mainly middle and right upper abdominal pain, 5) IBS and nonspecific diagnosis occur at any part of upper abdominal pain. In other studies, gastric ulcer pain occurred more often in the left hypochondrium and less often in the right hypochondrium. It is of interest that pain sites in gastric cancer were very similar to those in gastric ulcer, although with smaller numbers the

differences between gastric cancer and non-gastric ulcer causes of pain were not statistically significant. Esophageal pain occurred more often retrosternally and in the epigastrium than pain arising from other conditions(20).

No significant difference between the males and females in most of the final diagnoses except for gallbladder and biliary tree problems, hydatid cyst of the liver and the nonspecific disorder in which females have higher incidence than males. Also it is highly significant that the females in general had more incidence for chronic upper abdominal pain than the males.

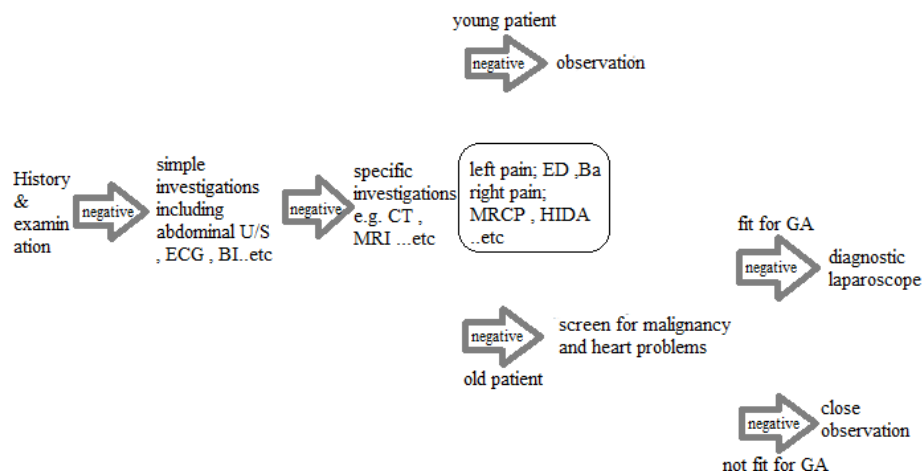
Conclusion:-

1. Chronic upper abdominal pain is diagnostic challenge for the surgeon. Accurate history and examination can give clue about the diagnosis, but cannot give the final diagnosis.
2. There is significant difference in the incidence of each disease that causing chronic upper abdominal pain with each age group , and most benign conditions that cause this pain occur in younger age groups while , the malignant conditions occur in old age groups . There are many diseases has no specific age group like achalasia, hydatid cyst of the liver, and the splenic abscess.
3. There is difference in differential diagnosis for each location of the pain, and this related to anatomical causes and to the internal organs which is the source of the chronic upper abdominal pain.
4. The diagnosis of the disease mostly is reached at simple investigation like ultrasound of the abdomen, and sometimes it need more specific investigations or interventional investigations which need fitness for general anesthesia or sedation.
5. The list of differential diagnosis is same between the males and the females, unlike of the lower abdominal pain which significantly deferent , therefore the approach to diagnosis chronic upper abdominal pain not so different in both males and females.

Recommendation:-

It is better to has an algorithm to reach the diagnosis for patients having chronic upper abdominal pain without leading signs or previous diagnosis. And it better to include the following steps: 1. Accurate history and examination for the patient 2. Send for simple investigations including abdominal ultrasound, ECG, blood investigations e.g. CBC .RBS... 3. Send for specific investigation according to the results of previous steps .4. if still no diagnosis (a) if the patient young (<40y) we can observe him (b)if the patient (>40y)we must screen for occult malignancy by chest and abdominal ct scan , blood tumor marker ,etc and screen for cardiac problems . Also it is recommended to has endoscopic and/or barium study for patient with chronic left side upper abdominal pain, and more detailed gallbladder and biliary tree studies (e.g.MRCP, ERCP, HIDA scan ...) for patient with chronic right upper abdominal pain.

Again if there is failure to reach the diagnosis in old patient with chronic upper abdominal pain and the patient fit for GA it is possible to do diagnostic laparoscope, if not fit the patient must be submitted for close follow up.



Figure(6) suggested algorithm for how to reach the diagnosis for patient with chronic upper abdominal pain

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Abbreviations:-

1. ACH	Achalasia	20. HP	Histopathology study
2. Ba	Barium study	21. IBS	Irritable bowel syndrome
3. BI	Blood investigations	22. IHD	Cardiac problems
4. CBD	Common bile duct	23. LS	laparoscopic study
5. CCA	Cardiac catheterization study	24. LT	Liver tumor
6. CHP	Chronic pancreatitis	25. MC	Mesenteric cyst
7. COT	Colonic tumor	26. MRI	Magnetic resonance imaging study
8. CT	Computerized tomography	27. MRCP	Magnetic resonance cholangiopancreatography
9. ECG	Electrocardiogram	28. N	Nonspecific
10. ED	Endoscopic study	29. NON	Nonspecific
11. e.g	Example	30. PT	Pancreatic tumor
12. ERCP	Endoscopic retrograde cholangiopancreatography	31. PU	Peptic ulcer
13. GA	General anesthesia	32. RBS	Random blood sugar
14. GB	Gall bladder	33. SA	Splenic abscess or cyst
15. GBS	Gall bladder & CBD stones	34. UK	United kingdom
16. GT	Gastric tumor	35. U/S	Ultrasonography
17. HCL	Hydatid cyst of liver	36. USA	United state
18. HH	Hiatus hernia	37. Y	Year
19. HIDA	technetium 99m-labeled derivatives of iminodiacetic acid scan for GB	38. *	The step of diagnosis.
		39. **	abbreviations