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PHARMACOTHERAPEUTICAL STUDY OF PEPTIC ULCER DISEASE

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ABSTRACT

Peptic ulcer disease is an excavation in the mucosa that protects and covers the area near the acid secreting parts of the gastrointestine and thus penetrating through the muscularis layer in the mucosa covering the esophagus, stomach and duodenum.PUD is one of the much more common diseases in the world and one of the leading causes of deaths. The data was conducted in the medical unit of Tertiary care Hospital, Swat. The aims are to evaluate the rational pharmacotherapy pattern for the peptic ulcer given to the patients in the mentioned hospital. Besides this to evaluate drug-drug interactions, drug food interactions and polypharmacy that are prescribed to the patients. Data was collected on random basis containing 48(66.66%) male and 24(33.33%) female patients. Most i.e. 27% the patients were in the range of 31-40 years .In most of the cases the treatment was based on arbitrary facts, however in some of the cases drug drug interactions were noted .For the successful pharmacotherapeutic plans of the disease proper knowledge regarding the drugs is required to eliminate or to decrease the chances of drug interactions in the prescriptions specially to the hospitalized patients. Also a clinical pharmacist is required to follow the recommended treatment protocols, for educating and counseling of the patients at the ward level.

KEYWORDS: Peptic Ulcer Disease, Rational, Pharmacotherapy

ABBREVATIONS: PUD=Peptic Ulcer Disease, *H. pylori=Helicobacter pylori*, GIT= Gastrointestine

INTRODUCTION

Peptic ulcer disease is the common disease that damages the mucosa of esophagus, stomach and small intestine i.e. of the duodenum and jejunum [1].The ulcer occurs due to the hypersecretion of acid, *Helicobacter pylori* infection and action of pepsin [2]. Besides these factors the other factors responsible for the disease includes stress, eating too much fatty food, rich food with spice and drinking alcohol and coffee [3]. Research had revealed that the primary cause of the peptic ulcer disease is the bacteria called helicobacter pylori also known as bacteria of stomach [4]. It has been proved from studies that prevalence rate of duodenal ulcer with respect to gastric ulcer is 4:1 in United States is 4:1 **[5].** The peptic ulcer is characterized by pain epigastrium, right hypochondriacs pain, nausea or vomiting, weight loss in case of gastric ulcer and weight gain in case of duodenal ulcer, heart burns and haematemesis **[6].** The peptic ulcer occurs whenever the balance between the mucosal protects ants and the acid secretion is disturbed .The gastroprotectants includes mucus secretion, bicarbonates secretion, mucosal blood flow, cell growth and prostaglandins **[7, 8].** The most commonly sites of peptic ulcer includes lower esophagus, stomach, and duodenum and in the upper intestine **[9].** In some cases it may be idiopathic **[10].** The mortality rates due to peptic ulcer bleeding from the upper GIT are 7-10% in the admitted patients [11]. Gender wise the prevalence rate of peptic is 11-20% in males and 8-11% in females **[12].** In the Holy month of Ramadan the incidences of peptic ulcer disease increases **[13].** The most common complications of the peptic ulcer are given below but in severe cases the sudden and large bleeding may leads to life threatening includes bleeding, perforation.obstrucion **[16].**The tests used for the diagnosis includes blood tests for *H.pylori* and endoscopy.Also barium meal examination is used for the identification

of PUD [14]. Various drug regimens are available for the treatment of peptic ulcer including Proton pump inhibitors,H_2 blockers,gastroprotective agents, antacids etc are present and triple regimen is available for the eradication of *H.pylori* [15].But it requires proper patient education and counseling about the use of drugs for eradication [16]. The paper is thus aimed to elaborate the role of clinical pharmacist in the pharmacotherapy and management of peptic ulcer disease by proper counseling and for educating the patient to achieve the successful therapeutic plans for PUD patients.

MATERIALS AND METHOD

The data was recorded on a standard proforma designed containing the patient demograpy,history of past and present medications ,causes of hospitalizations, investigation tests performed and other necessary informations regarding the therapy of the patients. 72 case histories were collected from the patients suffering from the signs ad symptoms of peptic ulcer .The data was recorded in the Medical unit of Saidu Group of teaching hospital, Swat from 15 october,2011 to 15 January, 2012.The cases recorded were then properly screened for the various drug induced problems including drug drug interactions. The data was extracted and tabulated in various tables on the basis of various parameters including male to female ratio and its percentages, comparison on the basis of age's ranges, treatment provided and the drug interactions recorded.

RESULTS AND DISCUSSIONS

The data obtained is then plotted in various tables i.e. Table 1, 2 and Table 3. About 72 cases were evaluated for drug related problems which were selected randomly which contains 48(66.66%) male and 24(33.33%) were female showing us that peptic ulcer disease is much more common in male than in female or in other words it is double in male(66.66%) than from female(33.3%),The highest level of patients recorded for peptic ulcer was in 30-40 years range .Besides these the therapy prescribed to the patients in most of the cases recorded contained drug interactions and were irrational mentioned in Table 3 ,so proper knowledge regarding the drugs and its safe use is required for the health care team to educate and counsel the patient regarding the safe use of medications. This will ultimately leads to patient compliance and successful therapy of the patient will be easily achieved.

Table 1: Data Regarding Patient Demography Cause of Hospitalization and Concurrent Disease(s)

Case No	Gender	Age(Years)	Main Cause of Hospitalization	Concurrent Ailment/Disease
01	M	30	Epigastric pain	Back ache
02	F	30	Epigastric pain	Arthritis
03	F	60	Epigastric pain	HTN
04	M	45	Pain epigastrium	HCV
05	M	30	Pain epigastrium	Nil
06	F	60	Epigastric pain	Anemia
07	M	60	Abdominal pain	HCV
08	F	35	Epigastric pain	Body aches
09	F	30	Bilateral flank pain	Joints pain
10	M	40	Fatigue,E.pain	CCF
11	M	40	Epigastium pain	Spinal T.B
12	F	30	Fever, pain epigastrium	Malaria
13	M	60	Epigastrium pain	NIDDM
14	F	45	Epigastrium pain	Nil
15	M	60	Epigastrium pain	Gastritis
16	F	35	Pain epigastrium	Gastroenteritis
17	M	60	Dyspagia,pain stomach	Genaral body pains
18	M	50	Abdominal pain	Burningmicturation
19	F	50	Pain epigastrium	T.B
20	M	30	Epigastrium pain	nil

Table 1: Contd.,

21	F	70	Epigastrium pain	DM,HTN
22	M	40	Pain epigastrium	HTN,back aches
23	M	60	Epigastrium pain	SOB,HTN
24	M	30	Pain epigastrium	HTN
25	F	50	Pain epigastrium	DM,liver cirrhosis
26	M	38	vomiting	nil
27	M	60	E.pain,vomiting	HCV
28	M	30	Paininrighthypochondrium	nil
29	M	75	Epigastrium pain	SOB,HTN
30	F	70	E.pain,vomiting	HTN
31	F	40	E.pain,vomiting	DM,HTN
32	M	38	Abdominal pain, vomiting	nil
33	M	24	E.pain,nausea	nil
34	M	19	E.pain,vertigo,vomiting	nil
35	M	40	E.pain,vomiting	CCF
36	M	45	E.pain,vomiting	Malena,HCV
37	F	11	E.pain,vomiting	Gastritis
38	M	45	Fever, gastric pain	Body aches
39	M	30	E.pain,vomiting,constipation	HTN
40	M	80	E.pain,Malena	Malena
41	F	35	E.pain,vomiting	nil
42	M	62	Weightloss,pain epigastrium	HTN
43	M	45	E.pain,vomiting	Body aches
44	F	35	E.pain,vomiting	Acute pancretitis
45	M	40	E.pain,vomiting	T.B
46	M	25	Pain epigastium.vomiting	nil
47	M	30	Abdominal pain	HTN
48	M	59	Malena,E.pain	HTN
49	M	30	Pain abdomen	nil
50	M	33	Epigastric pain	Diarrhea
51	M	30	Pain epigastrium	Asthma, Gastritis
52	F	30	Costipation.E.pain	HTN
53	M	15	E.pain,nausea	Diarrhea
54	M	15	Vomiting,E.pain	Fits
55	M	70	Constipation,E.pain	CCF,UTI
56	M	38	E.pain,nausea	CCF,HTN
57	M	35	E.pain,Vomiting	CVD
58	F	35	Fever,E.pain	Productive cough
59	F	70	E.pain,Nausea,Vomiting	nil
60	M	40	Nausea, Vomiting	nil
61	F	40	Pain epigastrium,vomiting	nil
62	M	28	Loose motions,E.pain	Generalbodyaches
63	F	16	Vomiting.E.pain	psychosis
64	F	35	E.pain,Headache,vomiting	nil
65	M	19	E.pain,vomiting,Anorexia	nil
66	M	70	E.pain.vomiting,fever	constipation
67	M	30	E.pain,heart burns	constipation
68	F	70	E.pain,Headache	HTN
69	F	40	E.pain,Nausea,vomiting	pregnancy
70	M	65	E.pain,nausea,vomiting	Productive cough
71	M	19	E.pain,Vomiting,anorexia	nil
72	M	45	Pain epigastrium	nil

M=male; F=female, HTN=Hypertension, SOB=Shortness of breath, DM=Diabetes mellitus, E.PAIN=epigastric pain, CVD=cardiovascular disease, CCF=Congestive Heart failure, UTI=Urinary tract infection T.B=Tuberculosis, HCV=Hepatitis C

- Total no. of patients = 72(100%)
- Male patients= 48 , 48/72*100% = 66.66%
- Female patients= 24, 24/72*100 = 33.33%
- Patients with epigastric pain = 66 ,66/72*100 = 91.66%
- Nausea/vomiting = 49, 49/72 *100 =68.05%
- Patients with weight loss = 07, 07/72*100 = 9.7%
- Pain in right hypochondrium =07 , 07/72*100 = 9.7%
- Malena =04 , 4/72*100 = 5.5% Concurrent disease(s) = 47/72*100 =58.3%
- DM = 5.5%
- HTN =19. %
- Hepatitis =5.5%
- SOB =4.16%
- T.B =% 5.5%
- CCF= 6.94%
- Acute panceatitis =1.38%
- Malaria =4.1%
- Constipation=2.77%

Table 2: Total Patients =72 Age in Years of the Reported Cases. Group Range= 10-80

Age(s) Ranges	Numbers of Patients	% of Total
10-20	06	8.3%
21-30	18	25%
31-40	20	27.77%
41-50	09	12.5%
51-60	09	12.5%
61-70	08	11.11%
71-80	02	2.77%

Table 3: Treatment Protocols Given at Hospital

Case No	Addition/Deletion of Drugs	Doses Interventions	Dosage form Interventions
1	Infusion dextrose is stopped as the patient is diabetic according to Laboratory findings(RBS)=587mg/dl	Nil	Nil
2	Injection Gravinate is added for the vomiting.	Nil	Nil
3	Infusion Normal saline is added because the patient is hypoglycemic.	Nil	Nil
4	Cimetidine is replaced by omeprazole.	Nil	Nil
5	Nil	Dose of omeprazole from OD to BD.	Nil
6	Inj.ceftral(Ceftriaxone Sodium)is added to combat or eliminate the infection as WBC level was 1000/Ul.	Nil	Nil

Table 3: Contd.,

7	Inj.Grivinate 50mg/ml is added for treatment of vomiting.	Nil	Nil
8	Amlodifine is added for the patient as he is hypertensive.(B.P)=160/85 mm of Hg.	Nil	Nil
9	Tablet Clopodogrel is stopped along with the omeprazole as it induces CYP2C19 and induces the chances of reinfection.	Nil	Nil
10	Sucralfte must be stopped due to the constipative crisis to the patient.	Nil	Nil
11	Syrup Digestine is added for the patient.	Nil	Nil
12	Nil	Nil	Inj.Omezol 40mg/2ml is replaced by Capsule Omezole 20 mg BD
13	Iron salts must be stopped by Omeprazole.	Nil	
14	Nil	Nil	Infusion of Omeprazole is replaced by Capsule Omega.
15	Nil	Nil	Tablet Ketoconazole is replaced by Ketocozole suppositories.

Total Interventions =15

Total interventions due to Drug additions = 6= 6/15 *100% = 73%

Total number of interventions due to Doses interventions= 1 = 1/15 *100% = 6.66%

Total number of interventions due to dosage form interventions = 3 = 3/15*100%= 20%

Total number of interventions due to dose interventions = 1 = 1/15*100%= 6.6%

Table 4: Drug Interactions Reported in Cases

Drugs Interacted	Remarks	Occcurence	%Age	Casenumber
Esomeprazole+Iron Salts	Esomepazole decreases the gastric acidity thus decreases the absorption of iron salts from stomach [17].	5	6.9%	1, 11,12, 13,14 .
Iron Salts+Ciprofloxicin	Iron salts decreases the absorption of the Ciprofloxicin [17].	1	1.38%	1
Cimetidine+ lprazolam	Cimetidine decreases the metabolism of alprazolam [17].	1	1.38%	2
Omeprazole+Iron salts	Omepazole decreases the gastric acidity thus decreases the absorption of iron salts from stomach [17].	1	1.38%	3
Tramal+Librex	Tramal increses the sedating effect of the Librex [17].	1	1.38%	4
Cimetidine+Chlordiazepoxide	Cimetidine increses the plasma half life of Chlrdiazepoxide thus increses the concentration and may leads to toxicity [17].	1	1.38%	5
Cimetidine+Amlodipine	Amlodipine increases the antiulcer effect of Cimetidine and thus produces synergestic effect [17]	7	9.7%	7,15,4,21,47,5,2
Cimetidine+Bromazepem	Cimetidine decreases the metabolism of Bromazepam [17].	1	1.38%	8

Table 4: Contd.,

Sucralfate+Ciproflo xicin	Sucralfate decreases the absorption of Ciprofloxicin [17].	1	1.38%	9
Omeprazole+Clopid ogrel	Omeprazole induces the increase clearence of clopidogrel [17].	1	1.38%	10

Table 4 shows us the drug inter actions in the drugs given concomitently to the patients of Peptic Ulcer disease. The Most frequently occurring potential drug interaction which I had noted properly extracted from the data and tabulated includes Cimetidine and Amlodipine (9.7%). Esomeprazole (PPIs) and iron salts are the second most important drug interaction (6.9% each). Cimetidine and Alprazolam and Bromazepam respectivley (1.38% of interaction). SimilarlyTramal and Librex,Cimetidine and Chlordiazepoxide ,Sucralfate and ciprofloxicin (1.38% each).

In one of the case the omeprazole and clopidogrel were given concometanly ,so it omeprazole induces the clearence of the clopidogrel so the level of clopidogrel decreses.

By evalauting the drug interactions in the case histories it has been concluded that the potential of drug interactions has been occure due to the polypharmacy and having poor knowledge about the drugs to be prescribed to the patients.The ultimate result of such interactions is less fruitful and more dangreous because it leads to the failure of the therapeutic plan made by the physician.Also causes ADRS,drug toxicity,non compliance and leads to discontinuation of the therapy.So clinical pharmacist must be induced at the ward level to control the drug interactions

CONCLUSIONS

Based on the above facts it can be concluded that for the proper rational pharmacotherapy of peptic ulcer disease standard protocols must be followed so that the chances of drud-drug interactions must be eliminated.Polypharmacy must be reduced upto less extants and the patient must be properly educated about the drugs.For achieving all these and to attain a succesful pharmacotherapeutic plan clinical pharmacist must be induced at the ward level.

RECOMMENDATIONS

- Smoking must be discourged in patients suffering from peptic ulcer.
- 2Patients must be advised to take care of oral hygiene and to proper wash their hands so that chances of *H.pylori* infection decreases .
- NSAIDs use must be limited in the patients if necessary then COX2 selective NSAIDs must be used.
- The patient must also be educated about the *H.pylori* eradication therapy as if discontinued so may reoccur to the patient.

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