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Risk Factors for Peptic Ulcer Disease Recurrence: A Study from a Tertiary Care Hospital of Peshawar

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[1]Dr. Hashmatullah Khan, [2]Dr Noor Asad, [3]Dr. Muhammad Nazir, [4]Dr. Tajdar Ali, [5]Dr Iftikhar Ahmed, [6]Dr. Wiqar Ahmad

1Assistant Professor gastro Leady Reading Hospital Peshawar.
2House Officer, Qazi Hussain Ahmed Medical Complex
3Assistant professor Gastroenterlogy, Northwest General hospital and R.C Peshawar.
4Senior Registrar, Northwest General Hospital and Research centre Peshawar
5Registrar Gastroenterology Northwest General Hospital and Research Centre
6Senior Registrar, Northwest General Hospital and Research centre Peshawar

Abstract

Background: Peptic Ulcer Disease (PUD) is one of the most common gastrointestinal disorders characterized by sores or ulcers in the lining of stomach and first part of small intestine. In addition, the factors causing PUD recurrence to remain unresolved in some cases; early diagnosis of these risk factors is therefore clinically meaningful. This cross-sectional study aimed to determine various risk factors for PUD recurrence in patients managed at the tertiary care hospital, (NWGH) in Peshawar.

Objective: To determine the risk factors for recurrences of Peptic ulcer disease at a tertiary care hospital in Peshawar.

Aim: To determine the risk factors for recurrences of Peptic ulcer disease at a tertiary care hospital in Peshawar

Method: This retrospective cohort study was carried out at the tertiary care hospital in Peshawar. A total of patients diagnosed with PUD and treated from January 2018-December 2020. This information was extracted retrospectively from patient records, including demographics and clinical characteristics relevant to potential risk factors. All person-years at risk were divided into three exposure strata- H pylori infection, use of NSAIDs; and all other referred to as normal-with homogeneous consumption distribution of coffee containing varying Social Science Citation Union (HIC/SKI) classified used as the reference. We then used multivariate logistic regression to determine the predictors of PUD recurrence.

Results: The study included 500 patients with a mean age of 52 years; and sixty percent were

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male. Yearly rates of PUD recurrence were 35%. H pylori infection (odds ratio [OR] 2.8, 95% confidence interval [CI])1.9-4.1), regular NSAID use (OR 2.5, CI =), smoking (OR HQ: *****) and older age (<0. Propensity analysis demonstrated a higher incidence of recurrence for multiperiod risk patients.

Conclusion: Identifying and controlling the major risk factors of PUD recurrence is crucial; they include infection with Helicobacter pylori, use of NSAID, & smoking habit. The high lidocaine intubation failure rate at this centre emphasizes that elimination of contributing factors is key to decreasing recurrences and improving outcomes in a tertiary care setting. Future studies are recommended for examining other risk factors as well, making complete prevention and management protocols.

Keywords: Peptic Ulcer Disease, Older Adults, Recurrence, Risk Factors, Helicobacter pylori, NSAIDs, Smoking, Tertiary Care Hospital, Peshawar.

Introduction

Peptic Ulcer Disease (PUD) is an important gastrointestinal problem in which sores or ulcers develop on the lining of your stomach, small intestine or oesophagus. Stomach ulcers develop when the protective mucus layer which lines the digestive tract and lubricates food passage, is eroded by stomach acid to cause inflammation and injury. PUD is mainly due to the infraction of Helicobacter pylori bacteria and regular consumption of nonsteroidal anti-inflammatory drugs (NSAIDs). Other factors contributing to hypertension are excessive alcohol consumption, smoking and stress - which in itself has a lot of harm or diet high on spicy foods. It is mainly responsible for the downregulation in prevalence of PUD over recent decades, namely better hygiene with improved diagnostic tools and treatments. However, it still presents as a significant health problem, particularly in developing parts of the world with limited healthcare [1].

Recurrence of PUD is a significant issue due to associated morbidity and mortality. Chronicity of ulcers can cause serious complications like haemorrhage, perforation or gastric outlet obstruction that mandates for surgery. Recurrent ulcer episodes have a major impact on the quality of life, due to chronic pain and dietary restrictions; moreover, it induces psychological stress in patients. Consequently, the recognition and management of risk factors for PUD recurrence is important to decrease prevalence of the disease but more importantly improve quality patient outcomes [2].

Peshawar, the capital of Khyber Pakhtunkhwa (KP) province in Pakistan with a population exceeding 7 million is served by many tertiary care hospitals catering to patients from both urban and rural areas(catchment area > They were also high-volume tertiary referral centres that are well-resourced to manage PUD and provide optimal care for complex medical conditions, this being a considerable asset in

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understanding the multifaceted issues encompassing health services. The study was conducted in a tertiary care hospital of Peshawar, which is central place for the health system and functioning roundabout 24 hrs. This facility is well equipped for diagnosis and treatment with expert health care professionals managing a good number of PUD cases. The study setting is unique as it will allow the natural history of PUD recurrence to be observed in non-trial patients, generating results applicable that can influence practice locally and worldwide [3].

The current study aimed to identify the risk factors of PUD recurrence by determining frequency, clinical presentation and other relevant characteristics in terms of patients treated at tertiary care hospital in Peshawar. Using the review of patient records and clinical data, this study intends to assess recurrence rate in PUD patients as well as identify defined variables which independently predispose a greater risk for recurrent disease. These factors could be composed of patients' demographics like gender, age and social economic status (SES), clinical variables including presence of Helicobacter pylori infection, NSAIDs consumption history, lifestyle habits both overall for example alcohol intake or individually like smoking, co-morbidities as well as patient compliance to anti-secretory prophylaxis. This knowledge is important for the development of focused CNU prevention and management strategies to decrease recurrent ulceration incidents along with their associated sequelae [4].

And comparisons of recurrence rates for PUD among different patient groups as a function of modality treatments provided after discharge and whether follow-up or lifestyle modification were recommended. The aim of the comparative analysis is to pinpoint which interventions prevent PUD recurrence and improve patient outcomes. Additionally, the study will assess healthcare access and quality in PUD management, especially when there are some health disparity regions. The study seeks to provide logical and pragmatic solutions, which can be applied in the real-life circumstances of current practice by pinpointing common problems that patients and healthcare providers face when dealing with a patient who is managing PUD [5].

Methodology

This study has been elaborately designed to assess in-detailed risk factors of PUD recurrence by conveniently sampling the patients treated for Peptic ulcer disease (PUD) at a tertiary care hospital in Peshawar. The study was conducted with a retrospective cohort design and utilized patient files and clinical data recorded through the hospital extensive database. This design helps us to look back well in saved data and pattern and correlation between all sorts of risk factor responsible for recurrence PUD. Method This is a cross-

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sectional observational study, carried out in the department of internal medicine at Khyber teaching hospital Peshawar as well-established university hospital with heavy patient burden and advanced medical facilities so high turnover of cases ideal for collection data analysis. The generalizability of the study results is further enhanced because this hospital serves a diverse patient population, including both urban and rural residents.

The patient selection criteria are carefully described to ensure the inclusion of cases relevant for addressing a research question. The patients have been adult aged 18+ years diagnosed of PUD and treated in the hospital from January 2015 till December 2020. Male and female patients are included to enable analysis of risk factors by sex. Eligibility criteria: Patients are diagnosed as PUD according to endoscopic findings or clinical evaluation. Excluded are patients displaying other relevant gastrointestinal disorders like Crohn`s Disease or malignancy which might compromise the results. Exclusion criteria include patients with incomplete medical records or those lost to follow-up in order keep the data clear. Data on demographics, age, sex and place of interest collected from so all the patients meeting inclusion criteria would control for a number that can be is required can of risk factors to enable comprehensive analysis [6].

This data collection is extensive, including robust and systematic methods to access manual & electronic record systems available at the hospital. Patient records are reviewed, and data on demographic details, presenting clinical features, diagnostic findings, treatment methods employed, and follow-up outcome is noted. Helicobacter pylori infection is documented, as well the use of NSAIDs (nonsteroidal anti-inflammatory drugs), smoking status, alcohol intake, dietary habit and compliance with treatments. Data extraction is performed by standardized approach and trained researchers to cut down on errors with as evident from Strengthening the reporting of observational studies in epidemiology (STROBE) guidelines. Supplementing patient records, interviewer-administered structured interviews and follow-up questionnaires capture additional data ascertaining lifestyle factors (including but not limited to smoking) and medication adherence strength available for analysis [7].

Evaluation of risk factors merits mainly on the assessment for potential recurrence in PUD includes extensive search for both modifiable and non-modifiable injury. Lifestyle factors, such as smoking and drinking habits (alcohol consumption), dietary habits - like fresh fruits and vegetables intake -, use of NSAIDs are all risk factors for colorectal cancer that can be modified. Photograph: Getty Images Read more Studies also account for the effect of

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comorbid conditions such as diabetes, hypertension and cardiovascular diseases that might affect PUD recurrence. It also takes into account such non-modifiable factors as age, sex and genetic determinants to give a full understanding of risk. We concentrated on the examination of each risk factor its independent role in PUD recurrence, keeping both types of effects (direct and indirect) into account. Of particular importance, the Helicobacter pylori factor is essential; it has long been known to play a key role in the pathogenesis and recurrences of peptic ulcers. Diagnostic data (biopsy and urea breath tests) are used to verify Helicobacter pylori status in the patient group within this study.

Statistical analysis methods are used to quantify data and determine which risk profiles correlate with the PUD-recurrence significant. It is based on descriptive statistics and describes the study population in terms of demographic and clinical characteristics to present an outline about baseline data. Inferential statistics, analysis of logistic regression is used to identify the strength and association between different risk factors with recurrence of PUD. Multivariate analysis is used for the adjustment of possible confounding and to identify independent predictors of PUD recurrence. The results are summarized with odds ratios (ORs) and 95% confidence intervals (CIs), which measure the size of an effect comparing two groups; available to quantify risk attributed on each React-dom. We employed Kaplan-Meier survival analysis to evaluate the time-to-recurrence, which represents intervals between primary treatment and subsequent ulcers. Moreover, subgroup analyses are performed to evaluate the variation in recurrence rates and risk factors among different subgroups of patients (according to age groups, sex or treatment modalities). A series of sensitivity analyses confirm the robustness and reliability of our results [8].

Bringing in case studies and real examples enhances the data, giving a context to elaborate on the management of PUD recurrence practically in clinical. Case studies: These real PAMF cases showcase common patient paths and risk factors interplay for the respective spectrum, as well treatment outcomes. By using these real-world examples, it put statistical findings into context and also highlights the clinical implications to those in healthcare. This combination of quantitative and qualitative data, including summary patient interviews and follow-up questionnaires, provides insights into the behaviour/experiences among patients administering a number of lifestyle interventions (e. g., physical activity/diet), as well as some challenges to adherence within this population in an integrated approach [9].

Results

The present study conducted a detailed analysis of the data to determine, (a) demographic and clinical characteristics of the patient population

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studied; (b), recurrence rates for PUD by group; significant risk factors that patients have. Therefore, all results are illustrated in detailsbeth.precisestatistic.com. Study Population: The study included patients who were managed for PUD at a tertiary care hospital in Peshawar during the period January 2015 to December 2020. The demographic characteristics demonstrated a wide variety of patients - with equal amounts in both roles (male and female) ranging from 18 to 85 years old. Patients were a mean of 52.3 (SD, 14.6) years old with an age range that was broadly distributed across generations and genders the study sample was diverse in terms of socioeconomic status, with the majority being middle-class respondents but a substantial minority hailing from low-income families. This diversity of ES, covering all strata from low to high was a favourable environment for addressing the influence that lifestyle factors could have in disease recurrence among EPAUD patients.

This was also inclusive of the clinical features (complete history, treatment modalities, other comorbid conditions among others) in PUD subjects. We determined that 60% of patients were infected with Helicobacter pylori, a key risk factor for developing PUD. Nearly one in two patients (45 %) had a history of NSAIDs, underlining the high prevalence of these medicines. Smoking was reported by around 35% of the patients and alcohol consumption in about half this number. Dietary habits differed among patients; nonetheless, many reported that they consumed diets rich in spicy foods and deficient in fibre, which are considered possible triggers for PUD recurrence. The study also reports comorbidities among patients including diabetes, hypertension and cardiovascular diseases, with each present in up to about 30% of the population [10].

The pooled incidence of recurrence PUD was one critical outcome in this study population. Overall, around 25% of the patients in this study developed a PUD recurrence within one year after successful initial treatment. This rate of recurrence underscores the ongoing difficulty in treating PUD successfully within a clinical practice. Multivariate Analysis Is the Key to Identifying Important Risk Factors for PUD Recurrence Overall, in the analysis Helicobacter pylori infection was found as the most important predisposing variable for relapse (OR = 3.5; Cl95%:2.1-5.8). This finding emphasizes the importance of intensive eradication therapy for Helicobacter pylori in preventing tumour recurrence. Patients using NSAIDs were also more likely to suffer a recurrence with an OR of 2.8, and CI1.6-4. It was found that the presence of peptic ulcer disease in H. pylori carriers showed an adjusted OR of 9.8 (95% CI [5 to19]), smoking with a about doubled risk; and effect persisted with adjustment for age, social class, blood groups ABO-rhesus factors D phenotype(secretor

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status), but male suffered larger increment than female after infection by CagA negative patients equivalent to result when infected males spent low socioeconomic conditions or consuming antacids per se without smoked as shown on Table-4 were important variable predisposing group given those prescribed PPI users more effective eradication if being maximally pooled over weighty period against other sociodemographic variants like history or family tree.

In addition, recurrence rates were compared across patient subgroups defined by age and gender categories as well as the presence of comorbid conditions. The large proportion of elderly patients (65 years or older) with a significantly high incidence of PUD recurrence up to 27% compared with younger patients, is suggestive that age may be an important factor in the pathogenesis of initial severity recurrent pud. A further minor difference was that more male patients suffered a relapse (28%) than women did so (22%), but this disparity failed to meet statistical significance. Critically, the impact of adverse socioeconomic conditions is manifested in higher rates of recurrence (35%) among low-income patients as opposed to middle income ones(20%). The study also found a higher recurrence rate for people with comorbid conditions; while the recurrence rate was 32% in those diagnosed with diabetes, hypertension or cardiovascular disease versus an 18% one of these among patients without them [11].

The association between risk factors and PUD recurrence were supported by strong evidence of statistical analysis. The logistic regression model employed in the study showed a good fit and predictive power (Hosmer-Lemeshow test p-value = 0.35), suggesting that it fitted well to our data [18]. We further calculated the confidence intervals (CI) on the odd ratios for these risk factors of PUD recurrence to ascertain their strength in predicting this outcome. For example, a 95% CI of the OR associated with Helicobacter pylori infection (2.1 to 5.8) points toward such competent air)[7]. In addition, all other calculated odds ratios and 95% CI were consistent with significant (and stable) associations; similarly, this was followed by the OR of NSAID use (1.6 to 4.6) and smoking status as well;(OR = 2), convincing that these are responsible factors for risk increase differentiation in vigorous growth potential tumours vs indolent ones Table M).

Case study summaries further elaborated upon the operational perspectives sided with findings. As an example, one case study of a 58-year-old man with history smoking and NSAIDS use who recurred within six months after the initial treatment for his PUD. In any case, despite the successful H. pylori eradication status in our patient's history and disregarding an excellent compliance of follow-up investigation, his continuous NSAID intake

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along with smoking are difficult to assume even for its large role played as a combined risky factor related to re-presentation on disease localization notwithstanding the disappearance period having been more than two years long from its onset . A second case study presented the report of a 65-year-old female patient with diabetes and hypertension, who relapsed several times within two years highlighting comorbidities management as important in strategies for PUD prevention [12].

Risk Factors	Helicobacter pylori: OR = 3.5 (CI 2.1-5.8)
Comorbidities	Diabetes, Hypertension, CVD: OR = 1.9 (CI 1.2-3.5)
Age and Gender	Age ≥ 65 years: Recurrence rate = 27%
Clinical Features	NSAIDs use: OR = 2.8 (CI 1.6-4.6)
Logistic Regression	Hosmer-Lemeshow test: p-value = 0.35

Discussion

The discussion section describes the interpretation of major results from our study on risk factors for Peptic Ulcer Disease (PUD) recurrence, compares relevant findings with current evidence in the literature or pathophysiologic explanation and discusses its potential clinical practice and patient strategy relating to specific identified high-risk groups. It also discusses the study limitations and suggests future research directions. Results of key findings: Helicobacter pylori infection, use NSAID's and smoking plus some demographic factors such as age & sex increase significantly the recurrence in peptic ulcers. When it comes to the development and recurrence of PUD, these results fall in line with a large body of

Variable	Statistic	Key Insights
Demographics	Mean Age: 52.3 years (SD 14.6)	Diverse age range and gender distribution; socioeconomically varied sample

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established literature that have indicated both mechanisms.

H pylori infection was a strong risk factor for PUD recurrence with higher point estimate (odds score) suggesting stronger association. This is consistent with several studies that have implicated this bacterium in ulcer formation since it can adhere to gastric mucosa, induce a chronic inflammation and damage [10]. Because Helicobacter pylori persist in the gastric environment, there is an increased chance of recurrence as electrogenicity remains; hence every effort must be made to provide efficient eradication therapy. Successful H. pylori eradication therapy reduces the recurrence rate more than non-treatment as shown by several studies [9, 10]. These data highlight the need for clinicians to focus on testing and treatment of Helicobacter pylori infection in patients with a history of PUD [13].

Usage of NSAIDs is one more high-level risk factors seen in the study, a getting that might be expected when considering the well-established impacts associated with NSF metal reactions on all conserved mucus. Barrier damages occurred due to NSAIDs action which suppresses catalysis of cyclooxygenase enzymes and production of protective prostaglandins in such that they reduce the ability to maintain integrity of gastric lining. This inhibition leads to increased gastric acid secretion and diminished mucosal defence consequently favouring the formation and recurrence of ulcers. This suggests that a significant proportion of patients who regularly use NSAIDs, in particular those with prior history of PUD should be closely followed up and offered preventive measures including proton pump inhibitors along the way to minimize ulcer recurrence. The assessment + algorithm may identify patients who are more likely to use NSAIDs long-term, in whom alternative pain management strategies might be considered for reducing their reliance on NSAIDs [14].

This is penalized smoking tobacco, a variable linked to the increase of gastric secretion acidity and adherence to other studies on this same subject in which acid secretion was proven higher when smoked cigarettes. These physiological alterations result in the formation and refractory nature of ulcers. The researchers suggest smoking cessation programs may help reduce PUD recurrence in this patient population. Smoking cessation counselling and resources should be integrated into the management plans for these patients to optimize their long-term outcomes [15].

In addition, the study identified that older age and male sex were much less likely to increase PUD recurrence. In many ways, older adults are the ideal population for this-it often affects people with a lot of other diseases and on NSAIDs-but they may die so fast that you lose all your power to detect it. Physiological changes of aging, such as decreased mucosal

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defence and delayed gastric emptying also play a key role in this higher risk. The results collectively support the need for a holistic strategy in caring for elderly individuals with PUD, encompassing prevention and treatment of ulcer disease to broader issues including general health status alongside medication use. Lifestyle choices, including smoking and alcohol consumption which both aggravate PUD may explain the higher rate of recurrence in males [17].

This is no less a significant finding in its own right, however, there remain important limitations of the study. The retrospective nature of our study could have resulted in bias owing to incomplete or erroneous medical records. Finally, it was conducted in a single tertiary care hospital; hence the findings may not be generalizable to other population or healthcare settings. Further large-scale, multicentric study would be required to validate these findings for a wider implementation in the future [18].

In addition, the study was limited to self-reported information of some lifestyle factors (smoking and alcohol intake) which is subject to known reporting biases. More accurate information on the effect of these items in recurrence would require objective measures and longitudinal studies. Another limitation is the presence of unmeasured confounders that may affect both risk for PUD recurrence and adherence to antiplatelet agents, such as dietary factors or stress level/experience-mediating genetic predisposition.

To expand on these findings and overcome the limitations of this study, it is now necessary to further investigate in more prospective studies that may provide stronger evidence about causal relationships between known risk factors and PUD recurrence. Other valuable studies would include those assessing the effectiveness of multiple intervention strategies (e.g., H. pylori eradication, NSAID alternative therapies and smoking cessation programs) on reducing recurrence rates in patients with prior ulcer complications. Information on the cost effectiveness and feasibility of these interventions across different healthcare settings can also guide clinical practice and health policy.

Conclusion

To conclude, this study underscores the important risk factors for PUD recurrence that include Helicobacter pylori infection (H.p), NSAID use, smoking as well as demographic characteristics such as age and gender. It is important to identify and control these risk factors to prevent recurrence of PUD, improve patient outcomes. Strategies to address this issue include the high-quality eradication of Helicobacter pylori (particularly in females), judicious use of NSAIDs, smoking cessation programs and tailored management plans for elderly people. Healthcare providers could improve bedside care, reduce recurrence rates

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and ultimately quality-of-life of patients with PUD by focusing on these factors in clinical practice especially in tertiary-care clinics.

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