

Original Research Article

Spike in peptic ulcer disease in pregnancy in a rural community of Enugu state, southeast Nigeria: is this an epidemic?

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ABSTRACT

Background: Pregnancy is said to increase susceptibility to *Helicobacter pylori* (*H. pylori*) infection, probably due to decreased cell-mediated cytotoxic immune response. Despite this, evidence from epidemiological studies suggest an alleviation of peptic ulcer disease (PUD) during pregnancy. One study found the incidence of PUD among pregnant women to be as low as 0.005-0.03%. The present study aimed to determine the incidence of PUD in women who attended ante-natal clinic in Cottage Hospital Inyi, Oji River Local Government Area (LGA), Enugu State, in 2021.

Methods: This was a cross-sectional study conducted with 435 pregnant women, aged 18- 40 years in 2021 in Inyi, Oji River LGA of Enugu State, Southeast Nigeria. Through purposeful sampling, 57 women were selected. From each of these patients, a stool sample was collected and examined using immunochemical fecal occult blood test. A horizontal line on the test strip signified a positive result, while its absence negative result. Data were analysed as proportion and Chi- square using MaxStat (version 3.6) statistical software. P value ≤ 0.05 was considered significant.

Results: The incidence of PUD in the pregnant women was 13%; 4.8% in primigravidae, and 8.2% in multigravidae. The association between PUD and parity was not significant (p value =0.89).

Conclusions: The incidence of PUD in pregnancy (13%) was much higher than ever had been reported in the past, being slightly higher in multigravidae than primigravidae. Health education on lifestyle modification and environmental sanitation could help in tackling this problem.

Keywords: Spike, Epidemic, Multigravidae, Peptic ulcer, Pregnancy, Primgravidae

INTRODUCTION

Even though the use of non-steroidal anti-inflammatory drugs (NSAIDs) and *H. pylori* infection have been identified as the two main risk factors for peptic ulcer disease, relatively few people with *H. pylori* infection who are taking NSAIDs develop PUD, suggesting that personal susceptibility to bacterial virulence and drug toxicity may be essential to the initiation of mucosal damage.¹ *H. pylori* infection affects approximately one half of the world's population and it is more prevalent in developing countries.^{2,3} Pregnancy is said to increase the susceptibility to *H. pylori* infection, probably due to decreased cell-mediated cytotoxic immune response.^{4,5} An earlier study of the incidence of *H. pylori* among

pregnant women reported an incidence of 41.8% among them.⁶ A similar study conducted later by another group of researchers found the prevalence of *H. pylori* infection of 60.5% among pregnant women attending an ante-natal clinic in Kampala.⁷

H. pylori infection in pregnancy is associated with many adverse effects such as extreme, persistent nausea and vomiting, neural tube defects in newborns, preeclampsia, intra-uterine fetal growth restriction and miscarriage, and thrombocytopaenia.⁸⁻¹³

However, despite the increased susceptibility to *H. pylori* in pregnancy, evidence from epidemiological studies suggest an alleviation of PUD during pregnancy, with many researchers reporting a decrease in the incidence of

PUD. Some past studies have reported an incidence of PUD as low as 0.005-0.03% among pregnant women.^{14,15} Nevertheless, the true incidence of PUD in pregnancy is difficult to estimate because the main symptom of dyspepsia is common to both the conditions. Peptic ulcers are believed to heal during pregnancy, and therefore quite uncommon in this condition. This is thought to result from the protective physiological changes and life style modifications like improved nutrition, rest, use of antacids, avoidance of stress, as well as ulcerogenic risk factors like smoking and alcohol ingestion.¹⁶ Reasons for the reduction in the incidence of PUD in pregnancy are also being attributed to increase in the gestational hormones, especially progesterone, that cause an increase in gastric mucus synthesis, reduced gastrointestinal motility, and lower gastric acid production in pregnancy, among other factors.

The hallmark of the clinical presentation of PUD is abdominal pain located anywhere between the umbilicus and the xiphisternum. Other symptoms include vomiting, heart burn, chest pain, upper back pain, and pain in the flanks. The diagnosis of PUD is based on the history, physical examination and laboratory investigations. Endoscopy is employed in selected cases. In resource limited settings, the investigations are limited to stool antigen tests, blood urea test and serological *H. pylori* assay. Although the *H. pylori* assay cannot differentiate between an active infection and a past one, it can be employed as a screening test useful in the test and treat strategy for the prevention of PUD.

Because of the concern for safety (the tendency to cause teratogenic effects in the fetuses), the use of H₂ receptor blockers and proton pump inhibitors (PPIs) in the treatment of PUD in pregnancy with triple therapy involving the use of these drugs, is largely deferred until after child delivery.

Although the few available studies have shown that the prevalence of PUD decreases in pregnancy, our observations have shown that this is not case in the present study. PUD appears to be common in pregnant women in the area of the study. Therefore, the present study is designed to determine the prevalence of PUD in women who attended ante-natal clinic in Cottage Hospital Inyi in 2021.

METHODS

This was a cross-sectional study conducted in a rural community, Inyi, in Oji River Local Government Area (LGA) of Enugu West Senatorial District, Enugu State, Southeast Nigeria.

Inyi is one of the five major towns that make up the LGA, having boundaries with Akpugoeze in the south, Awlaw in the east and Achi in the north. It is the second largest out of the five constituent towns. 435 pregnant women aged 18-40 years, who were seen at the ante-natal clinic

in 2021, constituted the population of the study. Simple purposeful sampling method was used as the sampling technique. The required sample size was obtained by including all the patients with such clinical symptoms as abdominal pain, vomiting, chest pain, upper back pain, heart burn, with positive stool test, and without previous history of peptic ulcer disease (inclusion criteria). Other pregnant women without these symptoms, or with a history of peptic ulcer in the past were excluded. In all, 57 pregnant women were recruited.

For the fecal occult blood test, a sample of stool was collected from each of the patients, and examined immediately, using the standard procedure for immunochemical fecal occult blood test. A positive test was indicated by a horizontal line on the test strip. A negative test did not show this line.

Data which were collected for a period of one year, were analysed as proportion and Chi-square using MaxStat (version 3.6) statistical software. P value of ≤ 0.05 was considered significant.

RESULTS

The distribution of patients according to parity is shown in Table 1. As shown in the table, out of 435 pregnant women seen during the period of the study, 160 (36.8%) were primigravidae, while 275 (63.2%) were multigravidae, a ratio of approximately 1:2.

Table 1: Patients distribution according to parity.

Total number of pregnant women	Primigravida	Multigravida
435	160 (36.8%)	275 (63.2%)

The incidence of PUD is displayed in Table 2. From the table, it is evident that 57 (13%) of the 435 pregnant women seen had PUD, while 378 (87%) were free from it. This shows that about 1 out of every 7 pregnant women had PUD.

Table 2: Incidence of PUD.

Total number or patients (N=435)	+PUD	-PUD
435	57 (13%)	378 (87%)

+ PUD= with PUD; - PUD= without PUD

Table 3: Incidence of PUD according to parity (n=435).

Overall incidence	Primigravida	Multigravida
57 (13%)	21 (4.8%)	36 (8.2%)

Table 3 shows the incidence of PUD according to parity. It is easily seen from the table that 21 (4.8% of the total) that had PUD were primigravidae, while the remaining 36 (8.2% of the total) were multigravidae. In other words, 21

(37%) of the 57 that had PUD were primigravidae, while 36 (63%) were multigravidae.

Table 4: Association between prevalence of PUD and parity.

Parity	+PUD	- PUD	χ^2	P value
Primigravidae	21	139	0.019	0.89
Multigravidae	36	239		

The association between PUD and parity is shown in Table 4. As shown in the table, there was no significant association between PUD and parity ($p=0.89$). This shows that the incidence of PUD among the pregnant women did not depend on parity, i.e., it is as common in primigravidae as in multigravidae.

DISCUSSION

Peptic ulcer disease (PUD) refers to ulcerative disorders of the lower oesophagus, upper abdomen and lower portion of the stomach.¹⁷ Disruption of the equilibrium between aggressive factors for ulcer formation and protective mechanisms against its formation can lead to ulcer formation. The use of non-steroidal anti-inflammatory drugs (NSAIDs) and infection by *H. pylori* have been identified as the two main causes of PUD, although idiopathic ulcer, caused by neither the use of NSAIDs nor infection by *H. pylori* has also been recognized.

PUD is reportedly rare in pregnancy. The low incidence of PUD in pregnancy has been attributed to the protective physiological changes and life style modifications.¹⁶ It has also been suggested that the reduction in the incidence of PUD in pregnancy could be linked to increase in the gestational hormones, especially progesterone, that cause an increase in gastric mucus synthesis, reduced gastrointestinal motility, and lower gastric acid production in pregnancy, among other factors.

Generally, there is paucity of data on the incidence of PUD in pregnancy. Literature search on this did not yield sufficient number of studies for a robust discussion. However, findings from the present study are at variance with some few similar past studies. As found in the study, the incidence of PUD in pregnancy among the study participants was 13%. This finding is much higher than the reported incidence of 0.03% by.^{14,15} The reason for this apparent spike is not presently known. However, lifestyle modification like improved nutrition, rest, use of antacids, avoidance of stress, which might be lacking in this rural community, could have played a role in the observed upsurge in the incidence of PUD. Another possible explanation for the observed increase in the incidence of PUD could be attributed to high prevalence of *H. pylori*. Studies have shown that pregnancy increases the susceptibility to *H. pylori* infection.^{4,5} While an earlier study reported an incidence of *H. pylori* infection of

41.8%, another similar study done much later found a higher prevalence of *H. pylori* infection of 60.5% among pregnant women in Kampala.^{6,7}

In the area of the present study, a rural area where the burden of unsanitary conditions is relatively higher, compared to urban settings, the incidence of *H. pylori* could be higher in pregnant women as well as the general population.

The finding of a high incidence of PUD in the present study might also represent a rising incidence of idiopathic ulcer, which could be worsened by psychological stress.¹⁸ Studies have shown that the prevalence of idiopathic ulcer has been increasing in recent years.¹⁹ This was also evidenced by a multicenter study in France which found that 22% of patients with duodenal or gastric ulcer were neither infected by *H. pylori*, nor using ulcerogenic drugs.²⁰

Another interesting finding of the study was the slight increase in the incidence of PUD with the increasing parity of the women. The incidence in primigravidae was 4.8%, while in multigravidae, it was 8.2%. However, the association between PUD and parity was not statistically significant ($p=0.89$). Most of the primigravidae were younger than the multigravidae, even though age was not correlated with the incidence of PUD in the present study. Some past studies have found a positive correlation between age and the incidence of PUD, with the incidence rising as age increases, peaking first at 25 years of age and then later at 64.^{21,22} Thus, increasing age might therefore be said to be responsible for the slight difference in incidence of PUD between primigravidae and multigravidae found in this study.

There are some limitations of the study. Poor antenatal clinic attendance by pregnant women in the area of the study affected the sample size which could be considered small. A larger sample size would have helped to increase the power of the study.

CONCLUSION

The incidence of PUD in pregnant women found in this study (13%) was much higher than had ever been reported. The reason for this is not yet known. Whether this represents an epidemic is also not known. PUD was slightly more common in multigravidae (8.2%), compared to primigravidae (4.8%), although the association between parity and PUD was not significant ($p\text{ value}=0.34$). Poor lifestyle modification and unsanitary conditions, as well as psychological stress with poverty, are being suspected to have played a role in the observed spike in the incidence of PUD among these patients.

Recommendations

It is therefore recommended that pregnant women be advised and encouraged to attend antenatal clinics as and

when due in order to benefit from health education activities which could ultimately help them make the necessary lifestyle modifications, in addition to improving the sanitary conditions of their environments. Application of these measures could in the end help to bring down the apparently high incidence of PUD that has been found in this community.

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REFERENCES

1. Lanas A, Chan FKI. Peptic ulcer disease. *Lancet*. 2017;390:613-24.
2. Ford AC, Axon AT. Epidemiology of *Helicobacter pylori* infection and public health implications. *Helicobacter*. 2010;1:1-6
3. Hunt RH, Xiao SD, Megrand F, Leon-Barua R, Bazzoli F, van der Merwe, et al. *Helicobacter pylori* in developing countries. World Gastroenterology Organisation Global Guidelines. *J Gastroint Liver Dis*. 2011;20(30):299-304.
4. Lanciers S, Despinasse B, Mehta DI, Blecker U. Increased susceptibility to *Helicobacter pylori* infection in pregnancy. *Infect Dis Obstet Gynaecol*. 1999;7(4):195-8.
5. Chang J, Streitman D. Physiologic adaptations to pregnancy. *Neurol Clin*. 2012;30(3):781-9.
6. McKeena D, Watson P, Dornan J. *Helicobacter pylori* infection and dyspepsia in pregnancy. *Am Coll Obstet Gynecol*. 2003;102(4):845-9.
7. Baingana RK, Enyaru JK, Davidsson L. *Helicobacter pylori* infection in pregnant women in four districts of Uganda: role of geographic location, education and water resources. *BMC Public Health*. 2014;14:915.
8. Poveda GF, Carrillo KS, Monje ME, Cruz CA, Cancino AG. *Helicobacter pylori* infection and gastrointestinal symptoms on Chilean pregnant women. *Rev Assoc Med Bras* (1992). 2014;60(4):306-10.
9. Mansour GM, Nashaat EH. Role of *Helicobacter pylori* in the pathogenesis of hyperemesis gravidarum. *Arch Gynaecol Obstet*. 2011;284(4):843-7.
10. Nanbakhsh F, Mohaddesi H, Bahadory F, Amirfakhrian J, Mazloomi P. Comparison of *Helicobacter pylori* infection between pregnant women with hyperemesis gravidarum and controls. *World Applied Sci J*. 2013;28(12):1918-22.
11. Golalipour MJ, Sedehi M, Qorbani M. Does maternal *Helicobacter pylori* infection increase the risk of occurrence of neural tube defects in newborns in Northern Iran? *Neurosciences*. 2012;17(3):219-25.
12. Cardaropoli S, Rolfo A, Piazzese A, Ponzetto A, Todros T. *Helicobacter pylori*'s virulence and infection persistence define pre-eclampsia complicated by fetal growth retardation. *World J Gastroenterol*. 2011;17(47):5156-65.
13. Eslick GD, Yan P, Xia HH, Murray H, Spurrett B, Talley NJ. Foetal intrauterine growth restrictions with *Helicobacter pylori* infection. *Aliment Pharmacol Ther*. 2002;16(9):1677-82.
14. Cappell MS. Gastric and duodenal ulcers during pregnancy. *Gastroenterol Clin North Am*. 2003;32:263-308.
15. Essilfie P, Hussain M, Bolaji I. Perinatal duodenal ulcer in pregnancy- a rare cause of acute abdominal pain in pregnancy: a case report and literature review. *Cas Rep Obstet Gynaecol*. 2011;2011:263016.
16. Clark D, Tankel HI. Gastric acid and plasma histamine during pregnancy. *Lancet*. 1954;2:886-9.
17. Dunlap JJ, Patterson S. Focus on clinical assessment: peptic ulcer disease. *Soc Gastroenterol Nurs*. 2019;42(5):451-4.
18. Chung CS, Ching TH, Lee YC. A systematic approach for the diagnosis and treatment of idiopathic ulcers. *Korean J Intern Med*. 2015;30:559-70.
19. Søreide K, Thorsen K, Harrison EM, Bingener J, Møller MH, Ohene-Yeboah M et al. Perforated peptic ulcer. *Lancet*. 2015;386:1288-98.
20. Charpignon C, Lesgourgues B, Pariente A, Nahon S, Pelaquier A, Gatineau-Sailliant G, et al. Peptic ulcer disease: one in five is related to neither *Helicobacter pylori* nor aspirin/NSAID intake. *Al Pharmacol Ther*. 2013;38:946-54.
21. Chong SKF, Lou Q, Zollinger TW, Tolia V, Elitsur Y, Gold BD, et al. The sero-prevalence of *Helicobacter pylori* in a referral population of children in the United States. *Am J Gastroenterol*. 2003;98:2162-8.
22. Akhtar F, Shelton P, Dinh A. Peptic ulcer disease. In: Domino F, Baldor R, Golding J, Stephens M, eds. *The 5-minute Clinical Consult*. 27th edn. Philadelphia: Wolters Kluwer; 2019:748-749.

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