Crimson Publishers
Wings to the Research

Mini Review

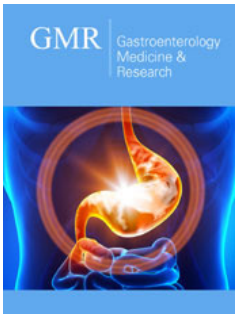
Gastric Cancer Prevention; Detection of Premalignant Gastric Lesions and Surveillance for Early Detection of Gastric Cancer in Low Incidence Countries

Georgios Zacharakis[1]*, Ahmed Abdullah Albadrani[1] and Mohammed Saad Alqahtani[2]

[1]Department of Internal Medicine, Endoscopy Unit, College of Medicine, Prince Sattam bin Abdulaziz University, University Hospital, Al-Kharj, 11942, Saudi Arabia

[2]Department of Internal Medicine, College of Medicine, Prince Sattam bin Abdulaziz University, Al-Kharj, 11942, Saudi Arabia

ISSN: 2637-7632



***Corresponding author:** Georgios Zacharakis, Endoscopy Unit, Department of Internal Medicine, College of Medicine, Prince Sattam bin Abdulaziz University, University Hospital, Al-Kharj, 11942, Saudi Arabia

Submission: October 16, 2023
Published: October 30, 2023

Volume 7 - Issue 5

How to cite this article: Georgios Zacharakis*, Ahmed Abdullah Albadrani and Mohammed Saad Alqahtani. Gastric Cancer Prevention; Detection of Premalignant Gastric Lesions and Surveillance for Early Detection of Gastric Cancer in Low Incidence Countries. Gastro Med Res. 7(5). GMR. 000671. 2023.
DOI: 10.31031/GMR.2023.07.000671

Abstract

Purpose: This study aimed to review the need for identification and surveillance of Premalignant Gastric Lesions (PGLs), which have potential implications for clinical practice and public health in terms of Gastric Cancer (GC) prevention and mortality reduction in low-incidence areas.

Methods: We conducted a narrative review of the latest literature.

Results: We discuss the benefit of a prevention strategy for GC by applying screening for PGLs in patients aged > 45 years or even in younger populations.

Conclusion: Few data are available on the endoscopic assessment and surveillance of PGLs, although international guidelines recommend the surveillance of such precancerous lesions. Scientists must conduct further prospective studies, collect more national data about the cost-effectiveness of such screening, and provide crucial insights into PGLs progression to GC.

Keywords: Premalignant gastric lesions; Surveillance; Identification; Epidemiology; Gastric cancer prevention

Introduction

Gastric Cancer (GC) incidence varies significantly worldwide [1-3]. Despite the decline in the incidence and mortality rates of gastric cancer in recent years, it continues to be a significant cause of cancer-related deaths [1]. Screening and endoscopic surveillance for GC can prompt early treatment and reduce mortality. Evidence suggests that there is no benefit to the widespread implementation of upper Gastrointestinal (GI) endoscopy screening for GC in the general population of geographic regions with low incidence rates. The potential benefits of such screening in countries with intermediate risks are also uncertain [4-7]. However, the updated EU recommendations recently included GC screening, given the growing awareness of the GC burden [4]. Unfortunately, no blood surrogate markers solely, excluding Esophageal Gastroduodenoscopy (EGD), are available for early diagnosis of GC [5]. In addition, Artificial Intelligence (AI) is in clinical trials for detecting Premalignant Gastric Lesions (PGLs), not in limited use for colorectal cancer screening, and clinical trials are ongoing [6]. The pathogenesis of this disease remains unknown. The Correa cascade is a well-known model that describes the stepwise progression of normal mucosa through chronic gastritis (chronic inflammation of the gastric mucosa), PGLs such as mucosal atrophy (loss of gastric glands), intestinal metaplasia (substitution of gastric epithelium by intestinal epithelium), dysplasia (intraepithelial neoplasia), and ultimately to carcinoma in a multistep process. Little is known about PGLs and how such lesions can progress to dysplasia and eventually develop into GC [7]. Similar to the guidelines from multidisciplinary European societies, the British Society of Gastroenterology (BSG) guidelines also recommend upper GI endoscopy screening for predefined high-risk individuals aged > 50 years. These high-risk factors include being

male, smoking, having pernicious anemia, and/or having a family history of gastric cancer, along with being subjected to follow-up for precancerous lesions in the stomach and premalignant gastric lesions (PGLs) [4,7-9]. The American Gastroenterology Association (AGA) Clinical Practice Guidelines on management of PGLs recommend surveillance of gastric intestinal metaplasia, excluding atrophic gastritis [10,11]. PGLs may represent a histological step just before the development of GC. PGLs have been considered a specific marker to identify patients who might benefit from surveillance because they have been associated with an increased risk for GC and are routinely encountered in clinical practice as recommended.

In low-incidence regions, there are few data available on the endoscopic assessment and surveillance of PGLs, which may negatively affect the yield of surveillance. Studies vary in the duration of PGL surveillance, time intervals, and high-, intermediate-, and low-risk countries. Recent studies have highlighted an increase in non-cardia GC cases among young individuals, particularly those below the age of 50, in countries such as the UK and the US, which typically have a low prevalence of HP infections [12]. Therefore, there is increasing interest in identifying PGLs in younger populations and in surveillance to detect early GC. Based on the recommendations for the management of epithelial precancerous conditions and lesions in the stomach (MAPS II) by European multi-societies, patients with PGL, such as atrophic gastritis or Intestinal Metaplasia (IM), and a family history of gastric cancer, incomplete IM, or persistent H. pylori-associated gastritis or dysplasia should be offered endoscopic surveillance [4,8]. These surveillance sessions involved guided biopsies and were conducted after three years to monitor neoplastic progression. The time interval between surveillance endoscopies was 1 year for cases with Low-Grade Dysplasia (LGD) and 6 months for those with high-grade dysplasia (HGD) [4,8-10]. When a visible lesion was identified, the patient underwent endoscopic resection as soon as possible. These programs have resulted in higher detection rates of early stage GC with substantially reduced mortality [4]. In Saudi Arabia (SA), one recent study showed among 334 patients aged more than 45 years old with PGL chronic atrophic gastritis was 27.8%, IM was 51.8% 19.5% had indefinite for dysplasia or mucosal LGD according to international Padova classification and 0.9% had HGD [13-15]. The overall risk for neoplastic progression was 0.4% per year, atrophic gastritis was 4%, 87% had IM, and 9% had dysplasia, and 26% had HP infection [16]. In Sweden, which comprises a low-risk Western population, the annual crude incidence of gastric cancer for those with normal mucosa was 20 per 10,000 population per year, 59 for chronic gastritis, 100 per 263 for atrophic gastritis, 129 for intestinal metaplasia, and 263 for those with dysplasia [17].

Future Perspective

Saudi Arabia (SA) has a low incidence of GC [18]. The neoplastic progression by surveillance of PGL in individuals aged 45-75 years old is 0.3% [13]. However, data are missing from SA and many countries with a low incidence of GC. In SA, we need to identify participants aged < 45 years with PGLs to assess the incidence of PGL among asymptomatic Saudi participants, the neoplastic progression by surveillance of PGLs in elderly and younger people less than 50 years old and identify patients most at risk for GC progression. Genetic cofounders and ethnic diversity should be included in future SA studies of PGLs and GC. This data will provide input for national guidelines concerning the early management of individuals at high risk for GC.

Conclusion

Upon recognizing the increasing burden of GC, the implementation of PGLs screening programs and surveillance for the prevention of GC is recommended even in countries classified as having a low incidence of the disease and in younger populations. Although identification of high-risk individuals is difficult because the disease etiology is multifactorial, screening and surveillance of individuals with age, environmental, genetic cofounders, and histological PGLs for a longer period of time will shed light on carcinogenic progress and improve guidelines for the early detection of GD, reducing mortality.

Statements and Declarations

Authors' contributions

All co-authors reviewed and edited the manuscript text and approved the final version.

Conflicts of interest

The authors have no competing interests to declare that are relevant to the content of this article.

Funding

No funding was received for conducting this study.

Data availability statement

Not applicable.

References

1. Deo SV, Sharma J, Kumar S (2022) GLOBOCAN 2020 report on global cancer burden: Challenges and opportunities for surgical oncologists. Ann Surg Oncol 29(11): 6497-6500.
2. Sung H, Ferlay J, Siegel RL, Laversanne M, Soerjomataram I, et al. (2021) Global cancer statistics 2020: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. CA Cancer J Clin 71(3): 209-249.
3. Ferlay J, Ervik M, Lam F, Parkin D, Piñeros P, et al. (2021) Cancer statistics for the year 2020: An overview. Int J Cancer 149: 778-779.
4. Lordick F, Carneiro F, Cascinu S, Fleitas T, Haustermans K, et al. (2022) Gastric cancer: ESMO clinical practice guideline for diagnosis, treatment and follow-up. Ann Oncol 33(10): 1005-1020.
5. Liu L, Lang J, Jin Y, Chen Y, Chang W, et al. (2019) The value of pepsinogen in GC screening: A systematic review and meta-analysis. Gastroenterol Res Pract 21: 7087232.
6. Zacharakis G, Almasoud A (2022) Using of artificial intelligence: Current and future applications in colorectal cancer screening. World J Gastroenterol 28(24): 2778-2781
7. Koulis A, Buckle A, Boussioutas A (2019) Premalignant lesions and gastric cancer: Current understanding. World J Gastrointest Oncol 11(9): 665-678.

8. Pimentel-Nunes P, Libânio D, Marcos-Pinto R, Areia M, Leja M, et al. (2019) Management of epithelial precancerous conditions and lesions in the stomach (MAPS II): European Society of Gastrointestinal Endoscopy (ESGE), European Helicobacter and Microbiota Study Group (EHMSG), European Society of Pathology (ESP), and Sociedade Portuguesa de Endoscopia Digestiva (SPED) guideline update 2019. Endoscopy 51(4): 365-388.

9. Banks M, Graham D, Jansen M, Gotoda T, Coda S, et al. (2019) British society of gastroenterology guidelines on the diagnosis and management of patients at risk of gastric adenocarcinoma. Gut 68(9): 1545-1575.

10. Cubiella J, Pérez Aisa Á, Cuatrecasas M, Díez Redondo P, Fernández Esparrach G, et al. (2021) Gastric cancer screening in low incidence populations: Position statement of AEG, SEED and SEAP. Gastroenterol Hepatol 44(1): 67-86.

11. Gupta S, Li D, El Serag HB, Davitkov P, Altayar O, et al. (2021) AGA clinical practice guidelines on management of gastric intestinal metaplasia. Gastroenterology 158(3): 693-702.

12. Arnold M, Ferlay J, van Berge Henegouwen MI, Soerjomataram I (2020) Global burden of oesophageal and gastric cancer by histology and subsite in 2018. Gut 69(9): 1564-1571.

13. Zacharakis G, Almasoud A, Arahmane O, Alzahrani J, Al-Ghamdi S (2023) Epidemiology, risk factors for gastric cancer and surveillance of premalignant gastric lesions: A prospective cohort study of central Saudi Arabia. Curr Oncol 30(9): 8338-8351.

14. Wang P, Li P, Chen YL, Lu Y (2022) Chinese integrated guideline on the management of gastric precancerous conditions and lesions. Chin Med 138(17): 1-27.

15. Park YH, Kim N (2015) Review of atrophic gastritis and intestinal metaplasia as a premalignant lesion of gastric cancer. J Cancer Prev 20(1): 25-40.

16. den Hollander WJ, Holster IL, den Hoed CM, Capelle LG, Tang TJ, et al. (2019) Surveillance of premalignant gastric lesions: A multicentre prospective cohort study from low incidence regions. Gut 68(4): 585-593.

17. Song H, Ekheden IG, Zheng Z, Ericsson J, Nyrén O, et al. (2015) Incidence of gastric cancer among patients with gastric precancerous lesions: observational cohort study in a low risk Western population. BMJ 27: 351.

18. (2020) Global cancer observatory. Saudi Arabia fact sheet.