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A Commentary on Hereditary Diffuse Gastric Cancer in Humans

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Description

Hereditary Diffuse Gastric Cancer (HDGC) syndrome is a cancer risk condition linked to pathogenic CDH1 mutations in the germline. CDH1 carriers are advised to have a preventive complete gastrectomy to reduce their chance of acquiring diffuse gastric cancer due to the high risk of developing the disease. Upper endoscopy is recommended in CDH1 carriers before to surgery and thereafter once a year for those who are postponing preventive complete gastrectomy. Individuals from HDGC families without CDH1 pathogenic variations are more difficult to treat, and families with CDH1 pathogenic variants without a family history of gastric cancer are particularly difficult to manage at the moment. Endoscopic identification of cancer foci in HDGC is inadequate and imprecise for assisting decision-making, despite adherence to monitoring guidelines.

Alternative endoscopic modalities, including as chromoendoscopy, endoscopic ultrasonography, and other non-white light approaches, have been used, but their efficacy in improving cancer diagnosis and risk classification in HDGC has been limited. In this paper, we look at what we know and what we don't know regarding endoscopic monitoring for HDGC in people who have and don't have germline CDH1 pathogenic mutations. Finally, the use of endoscopy in the management of HDGC remains a difficult task, but one that requires more study to better monitoring. Hereditary diffuse gastric cancer is an autosomal dominant condition caused by a CDH1 gene mutation that affects at least 30% of CDH1+ families, has an 80 percent penetrance at 80 years, and most patients have multifocal indicated ring cell. A preventative complete gastrectomy with Roux-en-Y esophagojejunostomy is recommended; however, cancer must be present for a gastrectomy to be effective.

A germline CDH1 mutation causes hereditary diffuse gastric cancer (HDGC), and microscopic foci of signet-ring carcinoma cells (SRCC) can be seen in virtually all gastrectomy specimens. The lifetime risk of invasive Gastric Cancer (GC) was formerly estimated to be 70%, but new research suggests a risk of just 37%. The standard of treatment is prophylactic complete gastrectomy, although many patients prefer monitoring endoscopy instead. We wanted to know how CDH1-positive people who underwent endoscopic surveillance.

Germline mutations in the gene encoding the cell adhesion protein E-cadherin cause hereditary diffuse gastric cancer (CDH1). E-cadherin is essential for cell polarity maintenance, and its loss during carcinogenesis is linked to poorly differentiated malignancies with a poor prognosis. Diffuse-type gastric adenocarcinoma, frequently with signet ring cell shape, is the most common kind of hereditary diffuse stomach cancer. From a young age, CDH1 mutation carriers' stomachs have a large number of stage T1a signet ring cell carcinomas, which occasionally exhibit enrichment to the transition zone between the body and the antrum.

In general, these signet ring cell carcinomas are indolent, hypoproliferative, and lack Wnt pathway activation. A small percentage of T1a foci, however, comprise cells that are poorly differentiated, have mesenchymal characteristics, and express active c-Src and its downstream targets. These similar characteristics are seen in more advanced stages of hereditary diffuse gastric cancer development, suggesting that tumour penetration beyond the muscularis mucosae requires an epithelial-mesenchymal transition. Somatic down-regulation of the second CDH1 allele, which is most commonly produced by DNA promoter hypermethylation, is required for hereditary diffuse gastric cancer start. Loss of polarity in gastric stem or progenitor cells as a result of CDH1 downregulation would be expected to interfere with mitotic spindle orientation and the segregation of cell fate determinants.

We believe that when cell division is disrupted, daughter cells are deposited in the lamina propria, where their population grows and partially differentiates, culminating in the creation of signet ring cell foci. Gastric cancers are caused by hereditary stomach cancer syndromes, which are an uncommon but unique cause of gastric cancer. The genetic mutations that cause the majority of the afflicted families remain unknown. CDH1 mutations are found in certain individuals with hereditary diffuse gastric cancer, and it is the sole viable marker for managing the disease.

Carriers with CDH1 mutations are at risk for a highly penetrant, aggressive, and early-onset diffuse-type gastric cancer, and preventive complete gastrectomy is frequently recommended. To increase our understanding of the underlying illness processes and better the therapeutic care of afflicted patients, more study is needed to find other genetic variants responsible for these disorders. HDGC (hereditary diffuse gastric cancer) is a cancer condition that is caused by a germline mutation in the E-cadherin gene (CDH-1). By the age of 80, males have a 67 percent chance of developing advanced stomach cancer, while women have an 83 percent chance. Multiple microscopic foci of intramucosal signet-ring cell carcinoma define early HDGC.

The time it takes for these foci to develop appears to be unpredictable, and the carcinoma foci may stay restricted to the mucosa for many years. Prophylactic gastrectomy or surveillance gastroscopies are two treatment choices for mutation carriers. Chromogastroscopy, which revealed early HDGC foci not apparent on white-light endoscopy, was employed in the only documented monitoring experience. New methods like as confocal microscopy, spectroscopy, and autofluorescence may be beneficial, although they have not been investigated in HDGC [1-5].

Conclusion

The probability of stomach cancer is less than 1% in individuals under the age of 20; nevertheless, the mortality and morbidity associated with complete gastrectomy exceed this risk. As a result, it is advised that genetic testing begin at the age of 16 and that yearly monitoring chromogastroscopy begin at the age of 16 in CDH-1 mutation carriers.

Delaying preventive gastrectomy after the age of 20 entails a high risk, especially if the alternative is white-light gastroscopy monitoring. Individuals less than 20 years old and patients hesitant to undergo preventive gastrectomy

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might seek surveillance chromogastroscopy (Congo red/methylene blue procedure). There is enough evidence supporting an elevated risk of lobular breast cancer among CDH-1 carriers older than 35 years of age to justify breast screening, but not enough data to urge preventive mastectomy.

References

1. Blackstone, Craig. "Converging cellular themes for the hereditary spastic paraplegias." *Curr Opin Neurobiol 51* (2018): 139-146.
2. Darios, Frédéric, Fanny Mochel, and Giovanni Stevanin. "Lipids in the physiopathology of hereditary spastic paraplegias." *Front Neurosci* 14 (2020): 74.
3. Blackstone, Craig. "Hereditary spastic paraplegia." *Clinl Neurol* 148 (2018): 633-652.
4. Murala, Sireesha, Elanagan Nagarajan and Pradeep C. Bollu. "Hereditary spastic paraplegia." *Neurol Sci* 42 (2021): 883-894.
5. Saputra, Lydia, and Kishore Raj Kumar. "Challenges and controversies in the genetic diagnosis of hereditary spastic paraplegia." *Curr Neurol Neurosci Rep* 21 (2021): 1-15.

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