

CORRELATIONS BETWEEN ATOPIC DERMATITIS AND THE DANGER OF STOMACH CANCER.

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Abstract.

Background/ Aim of study:

Epidemiological and clinical evidence suggest that allergies might be linked to lowered susceptibility to various cancers. Nevertheless, the exploration of connections between allergies and gastric cancer remains limited in existing research. This study was undertaken to investigate the potential of examining a comprehensive dataset from a population-based perspective, the study investigated potential links between allergies and gastric cancer.

Method:

Carried out at a tertiary care center in Patna for one year, this cross-sectional study encompassed 500 participants. It focused on analyzing the potential connections between allergies and gastric cancer, taking into account variables such as age, gender, body mass index, smoking habits, and alcohol consumption to address confounding factors.

Results:

Adjusted for potential confounders, the results of multivariable logistic regression analyses indicated a tendency for a lower risk of gastric cancer among individuals with a history of allergic diseases. However, it's important to note that these findings did not reach statistical significance. Furthermore, when considering gender-specific associations, the multivariable analysis indicated that a history of atopic dermatitis was linked to a decreased risk of gastric cancer in men. Top of Form

Conclusion:

The study's findings imply that there might be a connection between allergies and a lower risk of gastric cancer, although this association lacks statistical significance. Moreover, the results indicate that atopic dermatitis, specifically in men, is linked to a decreased risk of gastric cancer.

Recommendation.

It is recommended that researchers referring to this article further evaluate an intensive study on gender-based effects of atopic dermatitis and its correlation with the development of gastric cancer.

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1. INTRODUCTION.

Globally, gastric cancer accounts for 6.8% of all cancer cases, positioning it as the fifth most com-

mon cancer[1]. Furthermore, it ranks as the third leading cause of cancer-related fatalities. The emergence of gastric cancer is influenced by numerous factors, reflecting its multi factorial nature. Among these, *Helicobacter pylori* (*H. pylori*) infection plays a significant role in the pro-

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gression of gastric cancer [2].

In the realm of the immune system's involvement in the development of cancer, numerous research studies have indicated a potential link between the disruption of immune function in individuals with a history of allergies and the alteration of cancer risks. Over recent years, a considerable volume of epidemiological and clinical information has outlined connections between allergic conditions and the occurrence of cancer [3].

To gain deeper insights into the potential relationships between allergic disorders and susceptibility to gastric cancer, we investigated the risk of gastric cancer among patients with allergic ailments.

2. MATERIALS AND METHODS.

2.1. Population analysis and Source of data.

A cross-sectional investigation was carried out, utilizing data collected through a survey administered at a tertiary care center in Patna. This study encompassed an array of information acquisition methods, encompassing health interviews, health examinations, and nutrition surveys. These facets were meticulously conducted by proficient medical personnel and trained interviewers for health aspects, while nutrition surveys were executed by experienced dietitians. These surveys comprehensively gathered diverse participant data, spanning characteristics, physical measurements, socioeconomic backgrounds, lifestyle preferences, medical histories, healthcare service utilization, laboratory test outcomes, radiographic assessments, dietary behaviors, and food consumption patterns [4,5].

The study adopted a well-structured sampling approach, employing a multistage clustered probability design that factored in variables such as age, gender, and geographical location. To mitigate non-response instances and data anomalies, statistical experts adeptly employed post-stratification weighting techniques. This study made use of an extensive dataset that encompassed an arbitrary population to avoid bias affected by the choice of test treatment.

The data has been taken from the tertiary care centre in Patna, Bihar constituting a total of 500 participants within this timeframe. Participants with symptoms of atopic dermatitis and gastric cancer were included in the study, preventing gender bias by recruiting male and female patients, and adults above 29 years of age were involved. Individuals aged less than 30 years were excluded from the study cohort. Importantly, written informed consent was diligently acquired from all participating patients before the survey's commencement

2.2. Collection of data.

At the health center, health examinations and interviews were expertly administered by a team of skilled professionals, and medical technicians, including physicians and health interviewers. The computation of the body mass index (BMI) involved dividing an individual's weight in kilograms by the square of their height in meters. Smoking behavior was defined as having consumed five or more packs of cigarettes over a lifetime, with participants' smoking habits classified as never smoked, former smoker, or current smoker.

Alcohol consumption was categorized into three groups: those who consumed less than one drink per month, those who consumed one to four drinks per month, and those who consumed two or more drinks per week. Additionally, participants were asked about their medical background related to allergic conditions, specifically focusing on atopic dermatitis, allergic rhinitis, and asthma. The participants were divided into two distinct sets: the first comprising individuals with gastric ulcers, and the second being the control group, consisting of individuals who had not previously experienced gastric ulcers.

2.3. Statistical analysis.

Mean values of continuous variables were presented along with their corresponding standard deviations, while categorical variables were represented as percentages [6]. To compare groups using continuous variables, t-tests were employed,

and chi-squared tests were used for comparing categorical variables.

Logistic regression models were utilized to calculate adjusted odds ratios (ORs) along with their corresponding 95% confidence intervals (CIs). These models were employed to assess the associations between allergic diseases and gastric cancer. The multivariable models were carefully adjusted to account for various factors, encompassing age, gender, BMI, smoking habits (classified as never, former, or current smoker), and alcohol consumption (grouped as low, moderate, or heavy intake). Weighted values were used to present all results from both the univariable and multivariable logistic regression analyses. Statistical significance was determined by p-values below 0.05.

2.4. Ethical considerations.

Ethical guidelines laid by the Indian Council of Medical Research 'Ethical Guidelines for Biomedical Research on Human Subjects' were taken into consideration. A well-documented informed consent form was given to the patients to respect the individual's autonomy, to participate or not in research.

3. RESULTS.

3.1. Demographic and clinical characteristics.

Of the 500 participants, 231 (46.2%) were men and 269 (53.8%) were women; the mean age was 48.6 years. However, 2 patients were excluded from the study among which, one was a pregnant woman and the other was a geriatric patient with high susceptibility to the risks of this study. For participants undertaking the consent forms it was assured that pediatric or geriatric patients were avoided. The overall prevalence of gastric cancer was 5% i.e., n=25 patients. The characteristics of participants with gastric cancer and control individuals are shown in Table 1. In the gastric cancer group, there was a notably higher proportion of men compared to the control group. Conversely, the control group exhibited significantly greater percentages of current smokers and individuals with high alcohol consumption compared

to the gastric cancer group. The average age was higher in the gastric cancer group than in the control group. Additionally, the mean BMI was lower in the gastric cancer group compared to the control group. Within the atopic dermatitis group, a higher proportion of participants had a higher level of education compared to the control group. Notably, no differences in smoking status, alcohol intake, mean BMI or income levels were observed between the atopic dermatitis and control groups.

3.2. Association between atopic diseases and gastric cancer.

The results of the multivariate logistic regression analyses revealed that advanced age and male gender were linked to an elevated risk of gastric cancer. Conversely, a lower BMI demonstrated a protective effect concerning the risk of gastric cancer. While a history of allergic diseases indicated a potential for a diminished risk of gastric cancer, this association lacked statistical significance [7].

4. DISCUSSION.

In this cross-sectional investigation, we explored the potential connections between the risk of gastric cancer and allergic conditions like atopic dermatitis, asthma, allergic rhinitis, and overall allergic disease. Although there appeared to be a tendency to suggest that specific allergic conditions, such as atopic dermatitis, asthma, and allergic rhinitis, could be correlated with a lower likelihood of gastric cancer, these relationships did not achieve statistical significance. Our findings suggest a possible link between atopic dermatitis and a decreased gastric cancer risk, especially among males.

The impact of allergies on the development of malignancies is a subject of ongoing debate. Earlier epidemiological investigations have explored the relationships between allergies and various cancer forms [8]. Their results have presented a dichotomy: allergies may confer protective effects against specific cancer types, while concurrently posing as risk factors for others. Although

Table 1: **Participant characteristics at baseline were categorized based on the presence or absence of gastric cancer.**

Variables	All (n= 500)	Control (n=475)	Gastric cancer cases (n= 25)	p-value
Age (years)	48.6 ± 0.2	62.4± 0.1	48.6±0.2	< 0.001
Sex				<0.567
Male	231 (46.2)	247 (52.0)	17 (68.0)	
Female	269 (53.8)	228 (48.0)	8 (32.0)	
Smoking status				< 0.229
Never	281 (56.2)	266 (56.0)	16 (64.0)	
Former	92 (18.4)	76 (16.0)	3 (12.0)	
Current	127 (25.4)	133 (28.0)	6 (24.0)	
Alcohol consumption				<0.0.001
Less than once a month	340 (68.0)	228(48.0)	14(56.0)	
One to six times a month	113 (23.0)	133(28.0)	5(20.0)	
Two or more times a week	227 (45.4)	114 (24.0)	6 (24.0)	
BMI (kg/m²)	24.5 ±0.02	24.5±0.19	22.96±0.02	0.734

Table 2: **Participant attributes at baseline were categorized according to the presence or absence of a history of atopic dermatitis.**

Variables	All (n= 500)	Control (n= 470)	Atopic der- matitis cases (n= 30)	p-value
Age (years)	48.6 ± 0.2	48.4± 0.2	46.6±0.2	< 0.001
Sex				<0.567
Male	231 (46.2)	230 (49.0)	9 (30.0)	
Female	269 (53.8)	228 (48.0)	21 (70.0)	
Smoking status				< 0.229
Never	281 (56.2)	266 (56.0)	16 (64.0)	
Former	92 (18.4)	76 (16.0)	3 (12.0)	
Current	127 (25.4)	133 (28.0)	6 (24.0)	
Alcohol consumption				<0.0.001
Less than once a month	340 (68.0)	228(48.0)	14(56.0)	
One to six times a month	113 (23.0)	133(28.0)	5(20.0)	
Two or more times a week	227 (45.4)	114 (24.0)	6 (24.0)	
BMI (kg/m²)	24.5 ±0.02	24.5±0.19	21.96±0.02	<0.001

there are limited exceptions, prior research has generally highlighted an elevated susceptibility to lung cancer among individuals with asthma [9]. The link between heightened lung cancer risk and asthma might be attributed to the presence of chronic inflammation.

The connection between an increased susceptibility to lung cancer and the presence of asthma might be clarified by persistent inflammation. Previous research exploring the relationships between allergies and pancreatic cancer has produced varying results. One meta-analysis indicated no link between asthma and the likelihood of pancreatic cancer, whereas a more recent meta-analysis revealed consistent and opposite correlations between asthma and the risk of pancreatic cancer [10,11]. This pattern was also observed in the associations between nasal allergies and the risk of pancreatic cancer.

In a recent cohort study that utilized a database, it was revealed that the connections between allergies and cancer are dependent on the precise location within the body. Additionally, individuals experiencing multiple allergic conditions demonstrated reduced cancer risks in comparison to those with just a single allergic ailment. Moreover, diverse results have emerged from various research endeavors examining the possible connections between allergies and the risk of gastric cancer. The outcomes of a study conducted in Sweden pointed towards a protective impact of a history of asthma against gastric cancer [12,13]. Similarly, findings from a Finnish study uncovered a link between an asthma history and a lowered probability of developing gastric cancer [14].

Within this study, the likelihood of gastric cancer reduction was observed among men with atopic disease, whereas such an association wasn't evident in women. It's important to note that the overall occurrence of gastric cancer within the study population remained low, accounting for only 0.9%. Notably, the proportion of men was markedly higher within the group diagnosed with gastric cancer (43.0% men vs. 57.0% women). This disparity in gastric cancer risk between genders can likely be attributed to the limited in-

stances of gastric cancer in women, highlighting the inadequate statistical potency arising from a small sample size.

Nevertheless, when subjected to subgroup analysis based on gender, no significant divergence in the risk of gastric cancer due to atopic disease was found, and no noteworthy interactions tied to gender were detected.

The precise mechanisms that link allergies to the risk of gastric cancer are not yet fully understood. Allergies indicate a heightened immune system response, which can enhance the surveillance of tumors. This process aids in identifying and eliminating tumor cells. Allergic conditions are connected to higher levels of eosinophils and immunoglobulin E. [15]. A growing body of evidence suggests that eosinophils and immunoglobulin E might have significant roles in safeguarding against cancer development by engaging in activities that involve both tumor cell cytotoxicity and suppression. Conversely, persistent inflammation raises the vulnerability of affected organs to cancer. This could potentially clarify the increased risks of lung cancer in individuals with asthma and nasal cavity cancer in those with allergic rhinitis.

The results of our investigation indicate a potential link between specific allergies and a lower likelihood of developing gastric cancer. Our study discovered that men with atopic dermatitis exhibited a reduced risk of gastric cancer when compared to the general population. However, we did not observe similar risk reduction for other allergic conditions like asthma and allergic rhinitis. To gain a more comprehensive understanding of the connections between allergic diseases and gastric cancer, it would be valuable to conduct longitudinal cohort studies that consider particular allergic conditions within the context of *H. pylori* status. This approach would offer insights into the subsequent risk of gastric cancer associated with these allergies.

5. CONCLUSION.

The study's findings imply that there might be a connection between allergies and a lower risk

of gastric cancer, although this association lacks statistical significance. Moreover, the results indicate that atopic dermatitis, specifically in men, is linked to a decreased risk of gastric cancer. Therefore, it is recommended that researchers referring to this article may further evaluate an intensive study on gender-based effects of atopic dermatitis and its correlation with the development of gastric cancer.

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