Exploring the Relationship Between Helicobacter Pylori Infection and the Incidence of Bronchogenic Carcinoma

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Abstract : Background: Helicobacter pylori (H. pylori) is a gram-negative, spiral-shaped bacterium that affects nearly half of the population worldwide and humans serve as the principal reservoir. Infection rates usually follow an inverse relationship with hygiene practices and are higher in developing countries than developed countries. Incidence varies significantly by geographic area, race, ethnicity, age, and socioeconomic status. H. pylori is primarily associated with conditions of the gastrointestinal tract such as atrophic gastritis and duodenal peptic ulcers. Infection is also associated with an increased risk of carcinogenesis as there is evidence to show that H. pylori infection may lead to gastric adenocarcinoma and mucosa-associated lymphoid tissue (MALT) lymphoma. It is suggested that H. pylori infection may be considered as a systemic condition, leading to various novel associations with several different neoplasms such as colorectal cancer, pancreatic cancer, and lung cancer, although further research is needed. Emerging evidence suggests that H. pylori infection may offer protective effects against Mycobacterium tuberculosis as a result of non-specific induction of interferon- γ (IFN- γ). Similar methods of enhanced immunity may affect the development of bronchogenic carcinoma due to the antiproliferative, pro-apoptotic and cytostatic functions of IFN- γ. The purpose of this study was to evaluate the correlation between Helicobacter pylori infection and the incidence of bronchogenic carcinoma. Methods: The data was provided by a Health Insurance Portability and Accountability Act (HIPAA) compliant national database to evaluate the patients infected versus patients not infected with H. pylori using ICD-10 and ICD-9 codes. Access to the database was granted by the Holy Cross Health, Fort Lauderdale for the purpose of academic research. Standard statistical methods were used. Results:-Between January 2010 and December 2019, the query was analyzed and resulted in 163,224 in both the infected and control group, respectively. The two groups were matched by age range and CCI score. The incidence of bronchogenic carcinoma was 1.853% with 3,024 patients in the H. pylori group compared to 4.785% with 7,810 patients in the control group. The difference was statistically significant (p < 2.22x10-16) with an odds ratio of 0.367 (0.353 - 0.383) with a confidence interval of 95%. The two groups were matched by treatment and incidence of cancer, which resulted in a total of 101,739 patients analyzed after this match. The incidence of bronchogenic carcinoma was 1.929% with 1,962 patients in the H. pylori and treatment group compared to 4.618% with 4,698 patients in the control group with treatment. The difference was statistically significant (p < 2.22x10-16) with an odds ratio of 0.403 (0.383 - 0.425) with a confidence interval of 95%.

Keywords : bronchogenic carcinoma, helicobacter pylori, lung cancer, pathogen-associated molecular patterns
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