

Incidence of Lymphoma and Gonorrhea Infection: A Retrospective Study

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Abstract : Gonorrhea is the second most common sexually transmitted disease (STDs) in the United States of America. Gonorrhea affects the urethra, rectum, or throat and the cervix in females. Lymphoma is a cancer of the immune network called the lymphatic system that includes the lymph nodes/glands, spleen, thymus gland, and bone marrow. Lymphoma can affect many organs in the body. When a lymphocyte develops a genetic mutation, it signals other cells into rapid proliferation that causes many mutated lymphocytes. Multiple studies have explored the incidence of cancer in people infected with STDs such as Gonorrhea. For instance, the studies conducted by Wang Y-C and Co., as well as Caini, S and Co. established a direct co-relationship between Gonorrhea infection and incidence of prostate cancer. We hypothesize that Gonorrhea infection also increases the incidence of Lymphoma in patients. This research study aimed to evaluate the correlation between Gonorrhea infection and the incidence of Lymphoma. The data for the research was provided by a Health Insurance Portability and Accountability Act (HIPAA) compliant national database. This database was utilized to evaluate patients infected with Gonorrhea versus the ones who were not infected to establish a correlation with the prevalence of Lymphoma using ICD-10 and ICD-9 codes. Access to the database was granted by the Holy Cross Health, Fort Lauderdale for academic research. Standard statistical methods were applied throughout. Between January 2010 and December 2019, the query was analyzed and resulted in 254 and 808 patients in both the infected and control group, respectively. The two groups were matched by Age Range and CCI score. The incidence of Lymphoma was 0.998% (254 patients out of 25455) in the Gonorrhea group (patients infected with Gonorrhea that was Lymphoma Positive) compared to 3.174% and 808 patients in the control group (Patients negative for Gonorrhea but with Lymphoma). This was statistically significant by a p-value $< 2.210 \cdot 10^{-16}$ with an OR= 0.431 (95% CI 0.381-0.487). The patients were then matched by antibiotic treatment to avoid treatment bias. The incidence of Lymphoma was 1.215% (82 patients out of 6,748) in the Gonorrhea group compared to 2.949% (199 patients out of 6748) in the control group. This was statistically significant by a p-value $< 5.410 \cdot 10^{-10}$ with an OR= 0.468 (95% CI 0.367-0.596). The study shows a statistically significant correlation between Gonorrhea and a reduced incidence of Lymphoma. Further evaluation is recommended to assess the potential of Gonorrhea in reducing Lymphoma.

Keywords : gonorrhea, lymphoma, STDs, cancer, ICD

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