

Age Group: 19 and above



<http://microbiologynotes.com/cultural-characteristics-of-helicobacter-pylori/>

Team Breast Friends Fungal and Bacterial Infections in relation to Cancer

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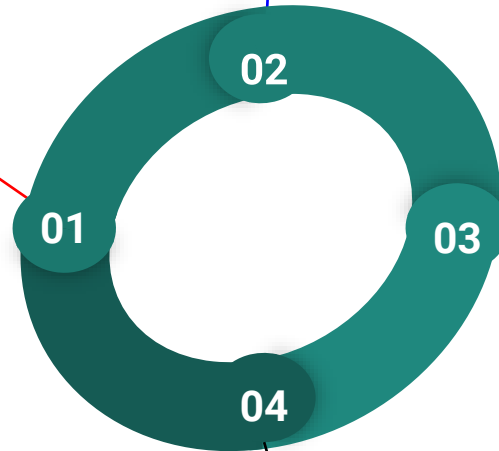


METHODS

Through using Pubmed as a scientific database, three studies examining fungal and bacterial infections effect on cancer were reviewed in order to form any relevant conclusions.

AIM

To examine the connection between cancer rates and bacterial/fungal infections found in lower socioeconomic demographics and sample studies done in still-developing countries.



DISCUSSION

The studies indicated that a person with fungal infection was at a higher risk of obtaining a cancer prognosis, and that the greater the number of infections a patient had, the poorer the chances were for cancer-specific survivals.

CONCLUSION

The human body's immune system is primarily responsible for handling any intrusion of harmful bacteria, parasites, or fungi. If being treated for cancer, it is possible that one's immune system is not functioning at full strength, and is thus susceptible to such infections. A strong correlation was found between cancer rates and fungal/bacterial infections.

What is cancer?

An out-of-control growth of cells within the body which results in the crowding out of normal cells.²

Some
fundamentals

Cancer is not limited to just one area of the body, but rather, can form anywhere. Furthermore, cancer is not limited to just one type of illness, as there are many types of cancers, each different in how they grow and spread, and what factors makes it worse.²

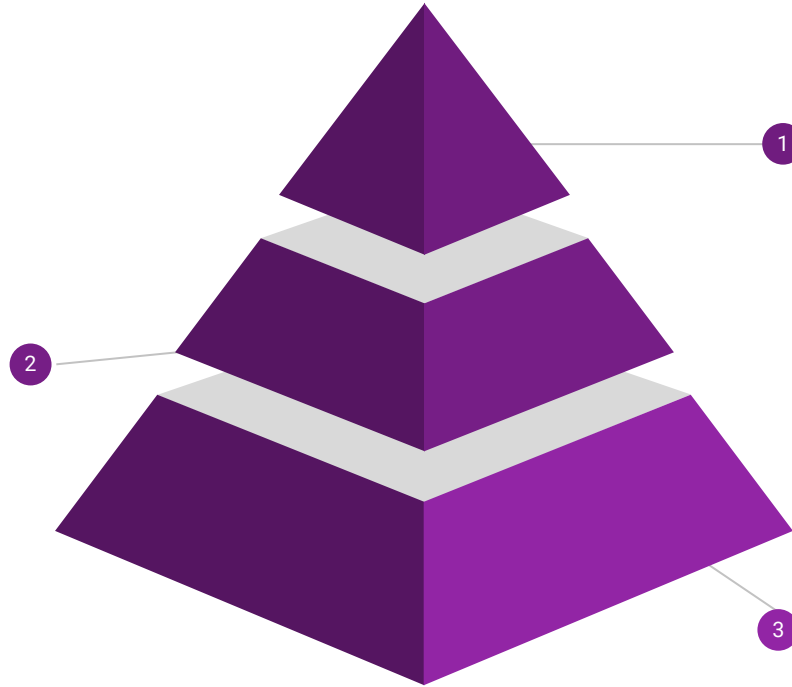
Common terms

Metastasis: the spread of cancer from point of origination to another part of the body
Tumor: an abnormal growth of solid tissue causing a swelling in that area. May be benign or malignant.²

Characteristics of a fungal infection

Common signs/symptoms include skin changes in color and texture, and itching. Fungi in general are difficult to get rid of as they have high survivability, some are contagious, and have the potential to reinfect a person in treatment.³

Fungal Infections: A background



What are fungi?

Organisms that can exist in land, water, air, or even inside the body. While some are beneficial to one's health, some may be dangerous.³

Common fungal infections:

Athletes foot, jock itch, yeast infection, and ringworm.³

Candida: A background



<https://lotusnaturopathic.com/candida/>

- **Candidiasis:** a type of fungal infection caused by yeast.
 - A small amount of candida is helpful in digestion and nutrient absorption
 - When allowed to spread out of control, candida can cause serious damage throughout the entire body.⁴
 - Yeast infection: the spread of candida to the genitals
 - Oral thrush: the spread of candida to the mouth and throat
 - Common symptoms: a direct impact on mood causing feelings such as depression and anxiety due to suppression of serotonin production, hormonal imbalance resulting in the inhibition of progesterone, and estrogen dominance, and holes in the intestinal wall allowing toxins to enter the bloodstream.⁴



<https://businessmirror.com.ph/2018/11/08/candida-these-are-the-symptoms-and-heres-how-to-fight-it/>

While recovering, it's common for symptoms to worsen before getting better due to negative effects of body detoxification

Monitor food intake: avoid products which yeast thrive on, such as sugar, starch, caffeine, carbohydrates, processed food, and alcohol.⁴

Natural supplements: By intaking supplements such as caprylic acid or origanum oil, yeast cells are killed with little to no harm done to good bacteria.⁴

Treatments for Candida

Candida cleanse: a diet plan designed to rapidly get rid one's body of candida with replacement of processed foods with fresh produce, and white flour with whole grains.⁴



https://assets.phenompeople.com/CareerConnectResources/WHFOGLOBAL/en_global/mobile/assets/images/Locations-Canada-Wholefoods.png

Fungal Infections: Current Research

- One study examined whether candida infection was correlated to cancer risk with a demographic set in Taiwan, a developing country. By randomly comparing close to 35,000 patients diagnosed with candida infection to a control group, a regression analysis was used to determine that patients with candida infection had a statistically significant higher risk of cancer as opposed to the control group.⁵
 - Gender, age, year of candida infection prognosis, along with other various factors were kept into consideration while forming both the test and control group.⁵

Implications and Conclusions

- The major finding was that candida infection led to a statistically higher chance of an overall cancer prognosis. **Thus, there may be a strong correlation between fungal infection and the inducement of cancer.**
 - These cancers include hematologic malignancy, head and neck cancer, pancreatic cancer, skin cancer, and thyroid cancer.⁵
 - Some additional reasons as to why candida may induce cancer are as follows:
 - Candida are known to produce nitrosamines, which are compounds which play a role in initiation of oral cancer.⁵
 - Candida, through its proinflammatory response, and mediated by an increase in cytokine production and adhesion-molecule expression, may promote cancer.⁵
- Future directions: In order to fully comprehend the relationship between cancer development/initiation and fungal infection, future studies will have to be made with other sources of fungal infection in mind. By doing such studies, an improvised and more personalized treatment plan may be formed with someone diagnosed with cancer, thus making research in this field so important.

Bacterial Infections: Background

What are bacteria?

Bacteria can be found in many different places and can live in the air, soil, and within living things. They come in all different shapes, sizes and forms.

Every person has bacteria living on or inside of them, a huge margin of all bacteria actually help our body with digestion, as well as aiding our immune system to protect our body.⁶

What are bacterial infections?

However, bacterial infections can occur when harmful, more threatening strains of bacteria accumulate and lower the body's immune response to combat diseases and other health issues.

Common symptoms of bacterial infections include fevers, nausea, diarrhea; often depends on the type of bacterial infection that an individual might have.⁶

Is there link between bacterial infections and cancer?

The link between cancer and bacterial infections have been shown to be correlated. One is typically more prevalent to arise when the other is already present.

Most cases of Bacterial infections linked with cancer are found in lesser developed countries where infrastructure and food and water supplies are contaminated and are often a safety risk.⁷

Helicobacter Pylori: Background



https://www.medicinenet.com/helicobacter_pylori/article.htm

There are few different types bacterial infections that can lead to the increased risk of cancer within patients. An example of a bacteria that often leads to development of cancer is Helicobacter pylori.

- When H. Pylori gets inside your system, it leads to inflammation in the stomach, consequently damaging the lining of parietal tissue inside the stomach. This can drastically increase the risks of developing stomach cancer and lymphoma of the stomach due to your immune system already fighting the bacterial infection.⁷

H. Pylori Treatments and Precautions

1

Medications

- When a bacterial infection is present, a physician would normally prescribe 2 or more antibiotics to get rid of the infection
 - This helps control the ulcers that form in your stomach
 - E.g. amoxicillin, metronidazole
- A medication to lower stomach acid is also prescribed to better treat the inflammation in your stomach.⁸

2

Lifestyle and Diet

- Lifestyle and diet don't directly play a part in preventing/causing an H. Pylori infection from occurring, but certain foods like spicy food and alcohol and smoking can worsen ulcers that are in your stomach.⁸

Bacterial Infections: Current Research

When observing the patterns that occur between bacterial infections and cancer, patients are frequently in environments where access to clean and safe water and food supplies are hard to attain.⁹

- A study done by a group of researchers from different parts of the world observed the ethnicity, age, geography and socioeconomic factors that come into play. They observed the prevalence of H. Pylori in numerous developing countries and reasons that pile up to cause poor hygienic conditions.⁹
- In theory, the increase in bacterial infections would result in an increase in cancer cases.

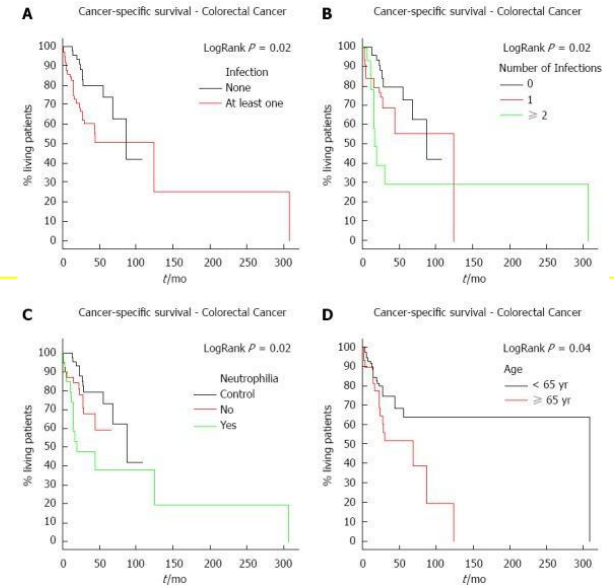
Another study done by a researchers in urban and rural parts of Brazil looked more into the effect of bacterial infections on cancer-specific survival in colorectal cancer patients. They noticed the more infections that were present, and the greater the number of infections a patient had, often led to poorer cancer-specific survival rates. And on top of that, they observed that elevated neutrophil levels were often linked to poor cancer-specific survival as well. Using a multivariate analysis and compared log-rank tests, the study was able determine a correlation between the two.¹⁰

Implications and Conclusions

Gastric cancer in general is not caused by bacterial infections like *H. Pylori*, however the correlation between the two is very strong.

- The first study listed out possible ways to manage and treat the problem of this increase of *H. Pylori*, from testing for Hp infections in younger patients with high risk of gastric cancers (none specified), to first line treatment options with various antibiotics.⁹
- The second study we looked had data that was analyzed from 106 patients ranging between 23-92 y/o with 44.11% of having stage III cancer. The data simply showed that survival for patients were much worse when infections occurred than without.¹⁰

To see the correlation even more clearly, a study can be done to see whether certain strains that are found specifically in low socioeconomic populations have a profound effect on cancer survival rates.



Cancer: a broader scope

One key point from this literature is considering the value of precaution. This is important not only when dealing with infections, but also, when considering cancer treatments or geographical location.

- **Chemotherapy:** one of the most widely used treatment option for cancer patients. Using a combination of various, extremely strong anticancer drugs, it helps a patient fight the cancer in their system and reduce the symptoms felt by the patient. A negative effect of this is that it puts the body's immune system in a more vulnerable spot, making it more susceptible to infections.
- Developing countries in general tend to have a lower age-standardized cancer rate as opposed to developed countries, such as USA.¹¹

By understanding the risks involved when dealing with cancer and using precaution, one will be able to approach cancer with a stronger and more personalized plan

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