Antibiotic Use Causes Fungal Overgrowth

1. *Effects of treatment with antimicrobial agents on the human colonic microflora*
   
   Therapeutics and Clinical Risk Management. Dec 2008
   
   “... the administration of therapeutic doses of antimicrobial agents to patients is a leading cause of disturbance of the normal gastrointestinal microflora. This disturbance results in diminishing the natural defense mechanisms provided by the colonic microbial ecosystem, making the host vulnerable to infection by commensal microorganisms or nosocomial pathogens.”

   “Another problem that may arise as the result of antibiotic treatment is fungal acquisition. Fungal overgrowth has been observed, specifically after treatment with antibiotics that reduce the population of anaerobic bacteria, in experimental animals, healthy individuals, and neutropenic patients.”

   “... found an association of the fungus with the intestinal epithelia of antibiotic-treated mice but not with those of the control mice that had indigenous bacterial flora. In the treated mice, some of the fungal cells penetrated deep into the mucosa of the intestinal tract, but most of them were associated with the cecal mucosa.”

2. *Effect of various antibiotics on gastrointestinal colonization and dissemination by Candida albicans*


   “Penicillin, clindamycin, and vancomycin, but not gentamicin or erythromycin, decreased the total anaerobic bacterial populations in the animals ceca, and increased the enteric bacilli population levels. All three of the former antibiotics allowed *C. albicans* to proliferate in the gut and, subsequently, disseminate from the GI tract to visceral organs. The ability of *C. albicans* to associate with intestinal mucosal surfaces was also tested. It was found that antibiotics which reduced anaerobic population levels, but not enteric bacilli or aerobes, also predisposed animals to mucosal association by *C. albicans*. It is suggested that the strictly anaerobic bacterial populations which predominate in the gut ecosystem are responsible for the inhibition of *C. albicans* adhesion, colonization and dissemination from the GI tract.
3. **Mechanisms of association of Candida albicans with intestinal mucosa.**

"...large numbers of C. albicans were associated with the intestinal epithelium of antibiotic-treated mice but not with that of the control mice that possessed an indigenous wall-associated bacterial flora. Moreover, Candida cells only penetrated deep into the mucosa of animals in which the ecology of the intestinal microflora had been disrupted. In mice given antibiotics, C. albicans was associated with the mucosa of all areas of the GI tract; the caecal mucosa had the most associated Candida, whereas the stomach and small intestine had very few associated yeasts. Further examination of caecal mucosa from antibiotic-treated mice showed that C. albicans associated with the mucosa by at least five distinct mechanisms.


4. **Effect of antimicrobial therapy on bowel flora.**

“A major role of the normal endogenous intestinal flora is to inhibit gastrointestinal colonization and overgrowth by potentially pathogenic bacteria. **Serious disruption of this protective mechanism may occur after the administration of various antimicrobial agents.** Alteration of bacterial flora by antimicrobials is often the result of incomplete absorption after oral administration or of high concentrations in saliva, bile, or secretions from the intestinal flora. **Suppression of endogeneous microflora after antimicrobial administration may permit overgrowth of pathogenic strains in the gastrointestinal tract, development or selection of antimicrobial-agent-resistant strains, and disruption of colonization resistance.**

5. **Mayo Clinic Yeast Infection (Vaginal)**

“**Antibiotic use**, which leads to a decrease in the amount of lactobacillus bacteria in your vagina and a change in your vaginal pH that **allows yeast to overgrow.**”


“Risk factors for candidiasis –
- **Altered flora resulting from antibiotic therapy**
- **Immunosuppression resulting from corticosteroids and immunosuppressive drugs.**”

7. **The Merck Manual Medical Library Candidiasis (Invasive)**

“This bloodstream infection is often related to broad-spectrum antibacterial therapy.”