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Side Effects When Using Antibiotics in the Long Term

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Abstract

We have known for some time that one of the unwanted side effects of taking antibiotics is their disruption of friendly microbes in the gut. But now a new study that takes a closer look suggests the consequences of long-term antibiotic use could be even far-more reaching than we thought. Antibiotics destroy cells in the lining of the gut. Antibiotic use is widespread - around 40% of adults and 70% of children take at least one a year, and billions of animals are treated with them. When used properly, antibiotics eliminate life-threatening infections, but around 1 in 10 people treated with them suffer adverse side effects. Scientists are beginning to discover that antibiotic use - and overuse especially - is associated with a range of problems that affect, among other things, glucose metabolism, the immune system, food digestion and behavior. As of April 2018, antibiotics ranked as the No. 1 most commonly prescribed drug class with sales hitting \$40 billion globally. Between 2000 and 2015, human use of antibiotics rose by nearly 40 percent. And some economists now say that if nothing changes, antibiotic resistance will be responsible for 10 million deaths around the world by 2050.

Introduction

Antibiotics are medications commonly prescribed by doctors for the treatment of various illnesses. These medications can be either synthesized in the laboratory or produced naturally by other microorganisms. Antibiotics work by inhibiting the growth of bacteria. They are usually prescribed for 7 to 14 days. However, in certain cases, especially in long-term illnesses a prolonged use of antibiotics is recommended, which is normally associated with various side effects. For this reason, it is very important for healthcare provider to weigh the cons when it comes to side effects of long-term use, as well as the pros. Antibiotics Can Lead to Resistance use antibiotics for a long period of time, you can easily develop a resistance, which means that a certain antibiotic does no longer work against a certain bacteria. This is one of the serious side effects of long-term antibiotic use. The more antibiotics you use and for the longer you use them, the greater is the chance of developing antibiotic resistance. This will make certain infections very difficult to treat. Changes in Normal Flora Several surface tissues, such as skin and mucous membrane, as well as certain internal organs such as the intestines, are colonized with large amounts of microorganisms, predominantly bacteria and yeasts. These microorganisms are part of the normal flora. However, excessive and prolonged use of antibiotics, especially broad spectrum antibiotics which act against several different types of bacteria, can lead to eradication of the normal flora from their habitats. According to Todar's Online Textbook of Bacteriology, lack of normal flora could lead to vitamin deficiencies, especially vitamin K and vitamin B12. It can also suppress the natural immunity of the body, making the individual more susceptible to infectious diseases. The decrease in the population of beneficial bacteria can also lead to overgrowth of unwanted microorganisms such as Candida, and can lead to conditions like oral thrush and Candida vaginosis.

Discussion

Antibiotics Can Increase the risk of metabolic disorder. The normal gut flora plays an important role in the overall health. One of the side effects of long-term antibiotic use is the destroying of normal gut flora, which plays a critical role in the development of metabolic disorders and inflammatory diseases. Prolonged exposure to antibiotics is related to diabetes, metabolic syndrome, obesity, etc. Antibiotics Increase the Risk of Type 1 Diabetes .The number of patients being diagnosed with type 1 diabetes is growing every day worldwide. Researchers believe that for this higher risk of type 1 diabetes, there is a connection between the prolonged use of antibiotics and the development of diabetes, an autoimmune disease. Antibiotics Can Lead to Vaginal Yeast Infections, Antibiotics not only interfere with the normal flora of the gastrointestinal system, but they also interfere with the normal bacterial flora of the vagina. One of the side effects of long-term antibiotic use is the development of vaginal yeast infections. Antibiotics Can Lead to Mouth Sores, Blisters, and Ulcers A prolonged use of antibiotics can lead to mouth sores, blisters and mouth ulcers due to candidiasis or oral thrush. Antibiotics Can Lead to Tooth Discoloration,One of the side effects of antibiotic use is tooth discoloration, especially after using tetracycline. This is especially true when tetracycline is used in childhood, in infants and children under the age of 8 years old, during the time when teeth are developing. This tooth discoloration is permanent and intrinsic. Tetracycline use during pregnancy can even affect the growing baby inside the uterus, mostly during the second half of the pregnancy. If tetracycline is used at other times, tooth discoloration is reversible, superficial and extrinsic.Recent research is now showing a link between antibiotic use and the development of allergies. antibiotics work by inhibiting the growth of bacteria in the human body, including the helicobacter. Helicobacter is one of the most unwanted bacteria which can lower the immune system. However, helicobacter also reduces the chances of developing asthma by 30%A large study published April 2, 2018 analyzed the health records of more than 792,000 children born between 2001 and 2013 and they found a link between babies who took antibiotics (or antacids) between birth and six months of age and the development of allergies as well as asthma. According to the lead author of the study, , exposure to antibiotics appeared to double children's future asthma risk, while prompting a 50 percent increase in risk for allergies to dust, dander and pollen (allergic rhinitis); eye allergies (allergic conjunctivitis); and anaphylaxis.Other side effect The ability of antibiotics to disrupt the menstrual cycle continues to be debated with research on this topic In January 2015, *Medical News Today* reported a a study on penicillin's effects on the menstrual cycle. It appears that some women don't experience a disruption in their cycle while others do when taken antibiotics. A total of 1500 patients were selected taken antibiotics ,890 of women taking antibiotics may affect estrogen and progesterone metabolism . When hormone

balance is possibly thrown off by antibiotics then this is when irregularities in a cycle could occur for a woman. Other studies According to an article published in the August 2015 edition of the "Journal of American Medical Association," bacteria such as Staphylococcus aureus, Streptococcus pyogenes and Mycobacterium tuberculosis are developing resistance against antibiotics, and as a result common infections are becoming more difficult to treat, patients are requiring extended hospital stays and the spread of these resistant bacteria is threatening communities. However, a study published the January 2014 edition of "Pharmacoepidemiology and Drug Safety" states that long-term use of amoxicillin, ciprofloxacin and doxycycline appears safe without increased adverse reactions. But these antibiotics are not useful in treating all types of infections. Vitamin K deficiency is known to cause coagulopathy and bleeding in patients on prolonged antibiotic therapy. This study was conducted to evaluate the status of vitamin K deficiency in hospitalized children on prolonged antibiotic therapy and its role in reversing the coagulopathy. A prospective non-randomized study was conducted on children on antibiotic therapy at a tertiary care hospital in India . Children in the 1 month-1 year age group developed significant coagulopathy as compared to other age groups. Coagulation abnormalities were also seen to be more in children with greater grades of malnutrition, on a more prolonged course of antibiotics and in children who were critically ill in intensive care. Hypoprothrombinemia previously reported to be due to B-lactam antibiotics containing the N-Methyl Thio Tetrazole (NMTT) group also resulted from antibiotics without this side chain. Inhibition of intestinal microorganisms by antibiotics was thought to be a likely explanation of this phenomenon. We suggest Vitamin K prophylaxis in severely ill patients, on extended periods of antibiotics and inadequate diet to prevent morbidity and mortality.

Conclusion

Antibiotics are medications that we have all used every now and then for the treatment of various health problems. However, before using antibiotics for a prolonged period of time, consult with healthcare provider first. Make sure to take antibiotics only for the treatment of bacterial infections. Don't use antibiotics, for the treatment of viral infections. Let milder illnesses resolve on their own without any medications. This way will prevent the development of antibiotic resistance. And there are many side effects of antibiotics that we know about and as research continues, we're learning even more such as the link between childhood antibiotic use and the development of allergies and asthma.

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