Antibiotics 101- What You Absolutely Need to Know

IntroductionAntibiotics are said to be the greatest contribution of modern day science helping the doctors to think beyond microorganinsms.their importance is felt much more in developing countries where the infections are prevalent. There is a mushrooming of antibiotics since last few decades because of both the need and the demand of aseptic conditions both in and out of the hospital.What are antibiotics?Antibiotics are chemical or biological substances either produced by microorganisms or are produced artificially to kill or inhibit the growth of other microorganisms. They are used at very low concentrations.What are different types?As there are innumerable antibiotics that are presently in use, different people classify them differently for e.g. those that kill or those just inhibit the action of the microorganisms, according to their chemical nature, according to the types of organisms they kill, according to the no of different types of microorganisms, their mechanism of action and so hence and so forth. Hence sulfadiazine and others are sulfonamides while isoniazid is nicotinic acid derivatives, etc. tetracyclines are bacteriostatic while vancomycin is bactericidal.How do they work?Some antibiotics for e.g. penicillins inhibit the cell wall synthesis of the bacteria, some like acyclovir inhibit the DNA synthesis, some like sulfonamides interfere with the metabolism and still others like tetracyclines inhibit protein synthesis. Similarly there are many others with different mechanism of action meant to be targeted at specific function of the bacteria or virus.Is there any need for them?After their discovery and then introduction into the world of medicine, initially they were used judicially but nowadays as more and more antibiotics are being developed and there has been a pressure over the physicians for an aseptic environment , these type of drugs seem to be overused. This has caused many fold problems. One problem is of toxicity that means that if the dose is much larger than expected then it may lead to accumulation in the body and may even lead to death in some cases. Second problem is of hypersensitivity, which means that certain antibiotics for e.g. penicillins can cause hypersensitive reactions in the body, which at times may be quite severe. But the most important problem and the problem, which has attracted much concern among the medical fraternity, is that of resistance. Certain microorganisms for e.g. Staphylococcus are known to get quick resistance against the antibiotics and you need to be cautious before using them blindly.What do we mean by resistance?By resistance we mean that a microorganism is either not responding or responding minimally to an antibiotic to which that microorganism used to respond earlier. There are numerous mechanisms by which they develop resistance and this may be making themselves impermeable to the drugs or making them inactive or mutating themselves, etc.What is the latest research going on?At present the latest research that is going on is to how to reduce the use of antibiotics by using them judicially so that the microbes might not fall to the prey of resistance and then be of no use to us.

About the Author

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