



Editorial

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Antibiotics; too Important to Leave it in the Hands of Medical Doctors



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Editorial

Mister Barrow, a forty year old business man, was watching a political rally in his home country (Gambia-West Africa), when he was caught up in a violent assault leaving him on the ground with an open fracture of his shin bone.

After admitted to the local hospital a thoroughly wash out was done. Some days later an internal fixation with cerclage wire and screws was performed.

One week later infection of the bone emerged. Mister Barrow was treated with regular debridement's and rinsing the wound with physiologic serum.

Intravenous and oral antibiotics were given for three years; meanwhile the metal ware was removed as soon as bone healing was seen.

Three years later the deep bone infection continues to destroy his bone but also his quality of living despite the prolonged administration of antibiotics.

Unfortunately the case of Mister Barrow is not unique.

In 2015 a review of J O'Neill on antimicrobial resistance, Well come trust, 2015 an estimate of 700.000 fatale cases due to resistance of multi-resistant bacteria were seen. The forecast for 2050 is that infection with multi-resistant bacteria will lead to 10⁶ dead worldwide. At that time it will be the leading cause of dead worldwide.

Alexander Fleming who discovered penicillin in 1928, few years later warned the medical community for overuse of this patented drug for the risk of the development of resistance against these pharmaceuticals.

Certain geographic zones are more touched than others; South-East Asia, China, Middle-East, Nord-Africa and some

parts of south Europe. The principle cause is the liberal use of antibiotics without any regulation.

Why is it that, especially in bone, infection can be so tenacious?

First of all, bone problems can be treated easily by metal implants; plates, prosthesis etc. Bacteria have a preference for these sites and protect them self very quickly with a slime layer, so called biofilm, which is not permeable for the defenses mechanism of the human body. Also antibiotics can't reach these places.

Even removal of these implants is not always sufficient to eradicate the infection; they found bacteria in the canaliculi, small connecting tubes of 4 microns, between osteocytes, which gives physical limitations of the host immunity.

Further point is the changing phenotype of bacteria under pressure of antibiotics. When antibiotics are given, bacteria tend to lower their metabolism, so called small colony forming variants. Only bacteria which are metabolic active can be reached by antibiotics.

Under stress, antibiotic stress?, it seems that bacteria proliferate in the cells. Making it for the immune system difficult to eradicate them.

This was seen for Staphylococcus Aureus, Pseudomonas Aeruginosa. Probably most of the bacteria that are living with us have this property.

It's time to accept the supremacy of bacteria which had their origins in the abysm of the oceans for 3.5 billion years. Humans are populating the earth some 4 million years.

We need another paradigm to rethink our defense mechanism against these intruders.

In orthopedic surgery less systematic antibiotics are necessary, highlighting the need for the correct application of prophylactic antibiotics, prevention, and in the case of bone infection, surgery which emphasizes on oncological type of resecting whole infected bone segments, rebuilding the

created bone defects with existing techniques of Masquelet or osteogenesis according to the Ilizarov technique.

Antibiotics are becoming so important now days that we can't leave it solely in the hands of the medical staff.



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