Case study: tuberculosis

Literature, Russian Literature

Case Study: Tuberculosis 1) What is Tuberculosis? Tuberculosis (TB) is a contagious bacterial infection caused by Mycobacterium tuberculosis. It mainly affects the respiratory system by mainly damaging and destroying lung tissue but can affect other parts of the body. It also suppresses the immune system making the body less able to fight any disease. 90% of people who are infected develop latent TB, which is were the bacteria are present in the body but are not active. This means the people who have latent TB have no symptoms and are not contagious. 2) How is Tuberculosis caused? Bacteria cause TB, which is spread through the air. Areas, which are crowded, increase the likelihood of the bacteria spreading. This is because coughing; sneezing and breathing near an infected person can lead you to gain TB. People who are malnourished, ill or have problems with their immune systems are more vulnerable to the disease. 3) What are the symptoms? If TB is active the bacteria can multiply very rapidly and therefore cause symptoms such as: * Fever * Night sweats * Loss of appetite * Loss of weight * Tiredness * Cough * Breathing problems If TB affects only the lungs then the specific symptoms include coughing, chest pain and coughing up blood. 4) What effect does it have? If the person has a healthy immune system there will be a localised inflammatory response forming a mass of tissue called a tubercule containing dead bacteria and macrophages. If the macrophages are unable to destroy the tubercule then more macrophages are attracted to it and this may cause it rupture, releasing bactilli into the bronchioles, which then can be coughed or sneezed out, causing it to spread. 5) Why is it so hard to kill? Mycobacterium tuberculosis can avoid the immune system by producing a think waxy outer layer, which

protects them from the enzymes of the macrophages. They are also able to prevent the lysosomes from working and can also produce toxins, which can damage and destroy the phagocytic cells. As the bacteria are able to reproduce very rapidly it is difficult for us to be able to produce an antibiotic as the bacteria would undergo many mutations and therefore we would have to keep creating new antibiotics which would be ineffective by the time they are released due to the mutations the bacteria would have had. We would be lagging greatly in the evolutionary race. 6) What is being done to prevent TB? People are getting vaccinated, as this is the best protection against TB. The BCG (Bacillus Calmette-Guérin) jab is made from a weakened bovine TB bacterium, which is not dangerous to humans but promotes a strong immune reaction.