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The Life of Robert Koch

‘This man has developed Kochs!’

‘Have you started him on AKT (Anti Kochs treatment)’?

— these are everyday statements. This modern medical slang for tuberculosis refers to Robert Koch, the man responsible for our knowledge of the dreaded germ.

Robert Koch is a popular name in medical history. He was born in Clausthal, a small town in Germany in 1843, one of the family’s eleven children! He studied Medicine at the University of Gottingen. Robert was an exceptional student and passed his doctorate in 1866. Later, he worked as an Assistant in Pathological Anatomy for a while and also had the good fortune of studying under Virchow. Robert tried his hand at private practice but found it uninteresting. He also served during the Franco-German war of 1871.

It was now time for him to settle into a definite job. He took up the job of a Sanitary Officer in Wollstein. It was here that Robert developed himself into a medical investigator par excellence. In Wollstein, he collected data on epidemics and epizootics and exchanged views with his teacher, Virchow. He also set up his own laboratory – which boasted of a microscope gifted to him by his wife and a collection of a variety of animals from the neighborhood. This was the foundation of a landmark era of superb bacteriological research in the years to come.

The first memorable work by Robert Koch was on anthrax. This disease has recently come into the limelight for all the wrong reasons. Robert established that anthrax bacilli were present in the blood of dead sheep and these could initiate the disease when inoculated into healthy animals. He also grew these bacilli for several generations in vitro using the hanging drop technique. He concluded that dead animals must be destroyed early to prevent the spread of anthrax. He sent a paper titled ‘Die Aetiologie der Milzbrand-krankheit begründet auf die Entwicklungs-geschichte der Bacillus Anthracis’ to Professor Cohn, which was the first verified version of a living germ causing a disease and its method of spread. His work on anthrax served as his basic training in Bacteriology, which helped him in his work on tuberculosis.

The subsequent career of Robert Koch was a wonderful transit from comparative obscurity to the chief of German medical scientists. He was invited to Breslau as a city physician. Soon thereafter he put forth his well known postulates; ‘The Koch’s Postulates’ the sine qua non of the attribution of a germ to a disease. In 1873, he shifted to Berlin. He continued his precious work and soon discovered the method of making and preserving pure cultures on solid media. This discovery, incidentally, was more of an accident initiated by the growth of a mould on a potato left open in the laboratory!

Koch now turned his attention to Tuberculosis. He attempted to demonstrate the bacillus by the established techniques and failed miserably. So, he gave up the alkaline media and used a balanced mixture of methylene blue and caustic potash and met with success. He also proved that Leprosy bacillus and a few more could be stained in a similar manner.

The success in demonstrating the tubercle bacillus led to many others. Robert Koch produced pure cultures of the bacilli, established the source of infectivity and the mode of spread. He also proved that the human and bovine strains were different. His comments on their relative pathogenicity in humans, were badly misquoted to the sheer delight of his detractors, but the fact remains that Koch never said that bovine bacillus was harmless to man.

His ‘conquest’ of tuberculosis did not end here. He ingeniously described the ‘KOCH PHENOMENON’, which laid the foundation of further work on immunity in tuberculosis. He also established the specific reaction to the injection of the ‘old tuberculin’, which is valued even today.

His contribution to the victory over tuberculosis is from womb to tomb; complete and astonishing in every way.

Robert Koch has to his credit many more investigations in bacteriology – those concerning cholera, plague, sleeping sickness, malaria etc. on the debit side is his racial and stepmotherly attitude towards fellow investigators like Pasteur and a stormy married life. But these are the merely human facets of the otherwise great personality of Robert Koch.

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