Baruch Blumberg: Discoverer of Hepatitis B Virus

JV Pai-Dhungat¹, Falguni Parikh²

Baruch Samuel Blumberg (1925-2011) was a Jewish American physician and scientist. He received the Nobel Prize in Medicine for his discovery of Australia antigen and Hepatitis B virus in 1976, along with Carlton Gajdusek (1923- ) who intensively studied Kuru and Slow Virus disease. Blumberg’s discovery has been the most important advance in the field of Hepatology. It led to virtual elimination of transfusion-related hepatitis B through Hepatitis B vaccination and was essential to the identification of Hepatitis A, C, D and E viruses. Credit also goes to his team in Philadelphia and Tokyo.

Blumberg was born in Brooklyn N.Y on 28th July 1925. This day is now celebrated as World Hepatitis Day. He joined the US Navy and served on landing craft from 1943 to 1946. He wanted to study Mathematics, but on the advice of his father, joined Columbia University College of Physicians and Surgeon to study Medicine. He received his MD degree in 1951. After working in the Arthritis division of Columbia-Presbyterian Medical Centre as clinical fellow in Medicine, he continued his research in Biochemistry at Balliol College, Oxford University in 1955 and received his PhD degree in Biochemistry in 1957.

Before graduating from Oxford University, Blumberg worked in Surinam, an isolated mining town in northern South America that was accessible only by river. Blumberg observed a significant variation in people’s response to parasitic infections, particularly filariasis. He later collected blood samples from natives in remote areas, to assess the impact of inherited traits on person’s susceptibility to disease, which he called inherited polymorphism. Blumberg’s main object was to study this serological polymorphism.

From 1957 to 1964 he was associated with National Institute of Health (NIH) in Bethesda. It is here that he studied the blood of many ethnic groups. In 1963, he and his colleague made unexpected discovery of an unknown antigen in a sample that he collected from an Australian aboriginal. They called it Australia antigen. Earlier, Blumberg had specially studied hemophilic patients who had received multiple blood transfusions. These hemophilic blood samples were thus a reservoir of a wide array of antibodies. Blumberg used these sera in testing the blood samples in laboratory. A match between a New York hemophilic and the Australian aborigine proved as the needed breakthrough (1963). On further research it turned out to be the Australia antigen that caused Hepatitis B (HBsAg) and was officially recognized in 1967. Blumberg’s discovery of Australia antigen was the starting point for enormous development over next decades of our knowledge concerning hepatitis. It led to rapid worldwide changes in blood banking procedures, vaccine development (by Irving Milman and Blumberg in 1969), and great reduction in the global problem. It also triggered work leading to subsequent identification of Hepatitis viruses A, D, C, and E. In the early 1970s, a case of infectious hepatitis was found and named Hepatitis A virus (HAV). In 1989, Hepatitis C virus (HCV) and in 1990, Hepatitis E virus (HEV) were isolated.

Blumberg was actually researching the genetics of disease susceptibility. He did not set out to discover hepatitis, but his work led to a major breakthrough and increased understanding of the disease. In the record of scientific investigations, this sort of happy use of good fortune has occurred in so many discoveries. Great many instances of serendipity can be sited in medicine. Luis Pasteur uttered a dictum “in the field of observation, chance favors only the prepared mind”. Even before Pasteur, Josef Henry enunciated the same truth when he said “Seeds of great discoveries are constantly floating around us, but they only take root in the minds well prepared to receive them”.

Baruch Blumberg died on April 5, 2011 at the age of 86 years.

¹Professor of Medicine, T.N. Medical College (Retd.), Hon. Physician, Bhatia Hospital, Mumbai; ²Consultant Internal Medicine and Infectious Diseases, Kokilaben Dhirubhai Ambani Hospital, Mumbai