

Historical note on blood transfusion By Prof. L. N. Gakuu

Karl Landsteiner
Born 14th June 1868. Died 26th June 1943

The leading article and the editorial is on blood transfusions. It is therefore befitting to give a brief biography of Karl Landsteiner. He was one of the first scientists to study the process of immunity and founded serology. He discovered that there are several types of human blood and established the ABO — system based on haemagglutination. This made blood transfusion a routine medical practise. In 1930 he was awarded the Nobel Prize in physiology/medicine “for discovery of human blood groups”.

Karl Steiner was born in Vienna on 14th June 1868. He was the only child of Dr. Leopold Landsteiner, a famous journalist and newspaper publisher who unfortunately died of heart attack when Karl was only six years old. He studied medicine at the University of Vienna from 1885. He began earnest research in Biochemistry while still a student and in 1891 he published his first paper on the influence of diet on the composition of blood ash. He graduated in 1891, aged 23. In 1892 he synthesized glycoldehyde and proceeded to study organic chemistry in Munich and Zurich and published many journal articles. In 1908 he was appointed director in Wilhelmina hospital up to 1919. In 1911 he was appointed Professor of pathological anatomy in the University of Vienna, but without corresponding salary. Up to 1919 he published many papers in morbid anatomy and immunology especially on syphilis and added a lot about paroxysmal haemoglobinuria.

In 1900 Landsteiner reported his most important discovery — the interglutination occurring between serum and blood cells of different humans. He suggested the phenomena was not pathology as was then thought but was a physiological phenomenon due to the unique nature of individuals blood.

In 1909 he classified the blood of human beings into the well known A, B, AB and O groups and demonstrated that transfusions between individuals of groups A or B do not result in destruction of new blood cells and that this catastrophe occurs only when a person is transfused with the blood belonging to a different group. For these experiments Landsteiner drew blood from himself and collected blood samples from his co-workers doctors Jacob Erdheim, Pleitschnig, Oscar Stoerk and Adriano

Starli who took part especially in grouping the fourth blood group AB in 1902.

He moved to the Hague and then New York and did further studies on blood groups especially bleeding in newborns leading to discovery of Rh-factor in blood which relates the human blood to the blood of the rhesus monkey. The discovery of blood groups by Landsteiner made it possible to do blood transfusions safely from one person to another. The first transfusion was achieved in 1907 by Dr. Reuben Ottonberg (1882–1959) of Mt. Sinai Hospital in New York, while his colleague surgeon Richard Lewisohn discovered that adding citrates to blood prevented it from coagulation thereby setting foundation of blood banks to enable blood storage for two to three weeks under refrigeration. The first citrated blood was given by Dr. Howard Lilienthat. He said “the ease and simplicity of this transfusion was most amazing to me who had so often suffered more than the patient” in this life saving operation. “Thereafter operation of the heart, lungs and complete blood exchange in neonates etc became feasible.

In 1902 he reported a new method of typing dried blood stains thereby assisting police solve crimes in which blood stains are found at the scene. By establishing that blood groups were inherited according to Johan Gregor Mendel laws of inheritance (1822–1884), Landsteiner ensured denying paternity was not easy and philanders and criminals were put on notice after the two discoveries. While back in 1927 he had discovered even newer blood groups M, N and P and published the articles. These types are used in paternity suits. In 1934 with W.S. Stratton they describe a blood factor only found in Negroes — the Hunter-Henshaw system. He became an American citizen in 1929. He retired in 1939 aged 71 years but continued quiet research.

Before introduction of the Euro, Landsteiner’s portrait adorned the one thousand shilling bank note in Vienna. Landsteiner was described as a modest, self critical, rather timid man known for extensive reading and publishing (350 papers). He was a lonely man with little time for socialising but enjoyed playing piano. He died with a pipette in his hand in his laboratory on 26th June 1943.

RIP