

History of Blood Program in Japan

Introduction

As development of the healthcare system varies from country to country, development of the blood program also varies. No doubt each country is making the best effort for the development of a better blood program according to the local situation. I decided to choose and introduce the history of Japanese blood program as the theme of my essay on Kawasumi's website this time. I hope you find it informative. Although a blood donation system based on voluntary non-remunerated blood donation is an ideal, such a system cannot be always achieved overnight. In Japan, the current blood program based on 100% voluntary non-remunerated blood donation was established after many twists and turns, which was a few decades behind compared to European countries and the United States. I would also like to introduce the history of tests for infectious agents, hemovigilance, establishment of the nationwide system to supply HLA-matched platelets, bone-marrow bank, umbilical cord blood bank, and so forth.

1. History of Establishment of Blood Donation System in Japan

Before 1945

While Japan was participating in the World War I on the side of the Allied Forces, the government of Japan dispatched professors of surgery from the University of Tokyo and the Kyushu University to the western front of Europe in 1919 and had them visit the field hospitals. They observed the transfusion technology there and introduced it into surgeries after returning home. This was the beginning of the transfusion treatment in Japan. However, a system for systematically supplying blood for transfusion, like blood banks in Europe and the United States, was not established.

From 1945 to 1964

Accepting the unconditional surrender, Japan was occupied by the victorious Allied Powers and under their military administration from the end of the World War II on August 15, 1945 to the San Francisco Peace Conference on September 8, 1951. During this post-war period, advanced surgical techniques in Europe and the United States, including anesthesia, brain surgery and cardiac surgery, artificial heart-lung machine, were introduced into medical treatment in Japan which was in a devastated state. This promoted recovery of medical care in Japan, and the number of surgical operations increased gradually. With the increase of surgeries, blood for transfusion was collected at first in hospitals from patients' family members and acquaintances and transfused to them. In those days, there was still no organization supplying blood for transfusion, and blood was collected mainly in hospitals. Meanwhile, in 1948, a patient who received blood transfusion in a branch hospital of the University of Tokyo Hospital got infected with syphilis. This led to establishment of a blood transfusion service in large hospitals such as university hospitals to test blood for

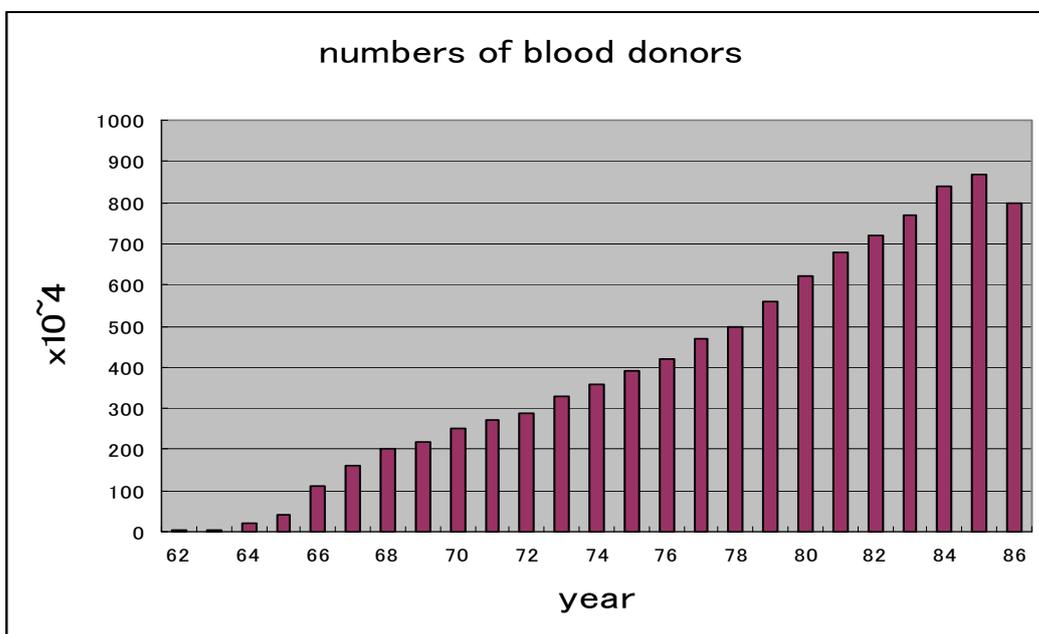
transfusion. The service performed interview, health check, test for syphilis, liver function tests, blood typing, cross-matching test, etc. of blood donors to ensure the safety of blood transfusion. The Supreme Commander of the Allied Powers urged the Ministry of Health and Welfare to establish blood banks. In 1947, the Japanese Red Cross Tokyo Blood Bank was founded within the Japanese Red Cross Medical Center in Hiroo, Tokyo. An appeal for voluntary non-remunerated blood donation was made, and blood banks of the Japanese Red Cross Society were also established in other cities. However, during this period immediately after losing the war, Japanese people were in poverty facing food shortage and severe employment situation, and could not afford to care for the misfortunes of others. Accordingly, response to the voluntary non-remunerated blood donation campaign was so poor that the number of blood donors who came to the Japanese Red Cross Tokyo Blood Bank was only a few hundred a year. On the other hand, the number of surgical operations kept increasing and there was an increasing demand for a great deal of blood for transfusion. In such a situation, the Japan Blood Bank based on sold blood was founded in Osaka in March, 1951. This prompted establishment of similar blood banks throughout the country. Blood banks using purchased blood such as the Japan Blood Bank expanded scale of their business all over Japan and were very successful, including those whose annual sales exceeded 500,000 dollars (in 1950's) within several years after starting their business. People in poverty such as students, unemployed and homeless people began to sell their blood to make a living. However, health problems of those selling blood and the high incidence of post-transfusion hepatitis among transfused patients became a social problem, and such blood was called "yellow blood."

After Cabinet Decision in 1964

In such a situation, U.S. Ambassador to Japan, Edwin O. Reischauer, who was a Japanophile and trusted by Japanese people, was stabbed by a terrorist with a knife and seriously injured on March 24, 1964. Although his life was saved by the hospital treatment, he developed post-transfusion hepatitis several weeks later. In the very first satellite broadcasting connecting Japan and America, Japanese Prime Minister Hayato Ikeda who was deeply concerned about this situation expressed his deepest regret to American people, and promised to establish blood centers solely based on voluntary non-remunerated blood donation. This led to prohibition of the blood selling system and founding of a blood program based on voluntary non-remunerated donation of blood. On August 21, 1964, Japanese Government made a cabinet decision entitled "Promotion of Blood Donation," which stated as follows: "In view of the present situation of the blood program, in order to secure an adequate supply of blood through voluntary non-remunerated donations as quickly as possible, the government shall work for the propagation of blood donation and the creation of blood donation systems by national and local authorities and promote the improvement of the collecting system for donated blood by the Japanese Red Cross and/or local authorities."

Based on this cabinet decision, the Japanese Red Cross Society established blood centers

throughout the country. The national and prefectural governments made appeals for voluntary non-remunerated blood donations to the entire nation through newspapers, radio and TV, and a nationwide campaign to promote blood donation was carried out by student groups and various volunteer groups. In some prefectures, prefectural blood centers not run by the Japanese Red Cross Society were formed. However, these blood centers were eventually transferred to the Red Cross Society, and now in Japan, all blood for transfusion is collected in Japanese Red Cross blood centers. As shown in the following graph, the number of voluntary non-remunerated blood donors showed steady and linear increase, which was truly a miracle. The number of blood donors was 1 million in 1966, but exceeded 8 million in 1985.



In 1986, the blood collection standard was revised from donation of 200 mL only, and 400 mL blood donation and apheresis blood donation were introduced in the system. Even though this resulted in decrease in the number of whole blood donors, the volume of collected whole blood has been remained around 2,000,000 L, which has met the domestic demand for blood 100%. What's behind this stable supply seems to be improvement in people's economic status resulting from the rising income level supported by the economic growth in Japan. In fact, Japan's per-capita GDP which was 4,000 dollars in 1960 increased to 9,500 dollars in 1970, 13,000 dollars in 1980, 19,000 dollars in 1990, and 21,000 dollars in 2000, bringing more comfortable life to Japanese people.

The following recommendation by the WHO to each of its member states also gave a boost to the establishment of the blood donation system. In May, 1975, the WHO recommended to its member states that they should promote establishment of a program for blood and blood products based on voluntary non-remunerated blood donations. The WHO also recommended that each country establish a law that enables effective administration of the blood program, and take necessary

measures for the health maintenance / improvement of blood donors and patients who had received blood or blood products. However, it took almost 30 years from then until the law concerning the blood included in the recommendation was established in Japan.

References

- 1) Douglas Starr “Blood: An Epic History of Medicine and Commerce”, Alfred A Knopf Inc. New York.
- 2) Cabinet Decision by Government of Japan dated August 12, 1964 “Promotion of Blood Donation”
- 3) WHO recommendation for blood donation policies, WHO 28th World Health Assembly, Geneva 13-30 May 1975.