Blood and Orthopedics

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Abstract

Blood transfusion is generally the process of receiving blood or blood products into one's circulation intravenously. Transfusions are used for various medical conditions to replace lost components of the blood. Early transfusions used whole blood, but modern medical practice commonly uses only components of the blood, such as red blood cells, white blood cells, plasma, clotting factors, and platelets. Blood transfusions were first introduced in the 1600's. Learn more about the history of blood transfusions by this paper.

Key words: Blood Transfusion, Leeches, Gangrene, Vascular Disease, Amputee.
Introduction

The bleeding, gangrene, and venous stasis have always been the cause of the amputation of limbs. Already in ancient times I try natural remedies such as leeches to remedy the problem of venous stasis and gangrene. The treatment of wounds from weapons of war and wars have led to the development of transfusion therapy and anti gangrenous or venous stasis.

The era of leeches

"Neither winds " Giovanni de'Medici said smiling: "<I would hold ", took the candle in his hand, in bringing light to himself, I will fled, and serratem the ears heard only two voices, and then call me, and I came to him he says: "I am healed," and turning to all it was a great feast." (Testimony of Peter Arietino during the intervention of Giovanni Dalle Bande Nere to save his legs from gangrene)

The use of leeches in medicine date back to 2,500 years ago, when they were used for bloodletting in Egypt. The Galenic medicine used them gladly as moderate ablative therapy. In ancient Greek history, bloodletting was practiced according to the humoral theory, as it was thought that the bloodletting therapy could balance the four humors: blood, phlegm, yellow bile and black in c. Hippocrates also reported in the fifth century before Christ, that the phlebotomy therapy was a method used by physicians to balance the moods and to rid the body of the plethora. All ancient civilizations have a tradition of bloodletting therapy. Hippocrates reports: <apply from 2 to 10 leeches on the spot indicated, using the anticoagulant properties, anti-inflammatory and antispasmodic Burr injected by the leech >>. The substance described by Hippocrates is the irudenia. According to tradition to implement the therapy it was: They keep the leeches "hungry" in jars with fresh water (changed every two days), covered with gauze shade until use. The application on the patient lying requires a bit of experience (preparation, implementation, monitoring for about an hour) and takes place in late autumn to early spring. Satiate, leeches fall off by themselves and must be placed in a bowl of water until they are forced death, a procedure that requires experience. The customer should be bandaged and medicated so that resists well to the subsequent light red blood cell that can last 24 hours. Nowadays applies another paradigm to apply to patients with known allergies to local antihistamines animal substances against the itching. In medieval Europe, a number of superstitious ideas and religious philosophies started to influence the practice of bloodletting. The bloodletting therapy lost the dignity of medical act is was attributed to the barber-surgeons. In the Renaissance there was a renewal of the Medical therapy with the use of leeches. One of the episodes that report the use for the treatment of war wounds, was an attempt to rescue the injured leg of Giovanni de' Medici, called dalle Bande Nere. On the evening of November 25, near Governolo, John is hit in the shin by a shot falconet, (probably provided by Alfonso I d'Este) that gives him a very serious wound. The chronicle reported: "... Giovanni de 'Medici co' light horse; And went more boldly because he did not know avessino had artillery, when they had set fire to one of 'falconets, the second pitch Roppe leg somewhat above the knee to Giovanni de' Medici; which shot, having been brought to Mantua, then died... »He was immediately transported to San Nicolò Po but is not a doctor so it is transported in Mantua at the Luigi Gonzaga palace called " Swashbuckler ", where the surgeon Abraham, who already had successfully treated two years ago, amputated the leg. To do so the doctor asks that 10 men take firm John.

Gangrene, however, is unstoppable and in a few days it leads to death. The brave leader goes out November 30, 1526, and was buried in full armor in the church of San Francesco in Mantua. John, in agony, had initially decided to entrust the command of the troops in Lucantonio Cupano, one of his most faithful soldiers, or his nephew Pier Maria Rossi of San Secondo Parmense, the son of his sister Bianca Riario, but it's useless: their lack of chief and his charism, the bands will melt. Giovanni de 'Medici was the victim of the loss of "hot oil", because the tradition had forgotten surgical ligation of the vessels that was used in ancient times, and it was not until the work of Ambroise Pare, for the return of tying vessels. The practice continued until the 19th century. In 1833, In 1833, bloodletting became so popular in
Europe, that the leeches trade became a major industry. France, suffered a shortage having to import 41.5 million leeches. The medicinal leech almost became extinct in Europe because of the huge demand and supply without brakes.

**Blood Transfusion**

Records of the practice of transfusion in antiquity there are none. In some medical and literary works, reference is made to the use of blood, especially to give strength, beauty or youth, but to assume that this happened in transfusion sense seems a stretch. It seems more likely that the administration was rather orally, as a magical practice, common to many peoples and many times, even before medical. In the therapeutic sense Celso, although some doubt, remember how it was possible to treat epilepsy by drinking the blood of the gladiator just beheaded, and as medicine blood, after he was taken to some young, was administered by a jew physician to Pope Innocent VIII dying, to reinvigorate it. The first certain news of a transfusion as we understand it dates back to 1667 when Louis XIV physician Jean Baptiste Denis transfused blood of the lamb in a young, seems ill with typhus. However, the patient will die and J.B.Denis will be charged with murder. However, the practice began to spread though with so much negative results (mainly using animal blood) to be immediately abandoned. In 1679 in Rome the papal government prohibits the practice. It was not until 1818 when James Blundell, a British obstetrician, uses successfully to a blood transfusion in a case of postpartum hemorrhage using the husband of the patient's blood. In the following years he will practice a dozen other transfusions, always with human blood, resulting in half of the cases favorable outcome. By now it was clear that using human blood, the risks are minor, although they remain very high the chances of even fatal reactions. The same William Stewart Halsted, who has linked his name to the intervention of radical mastectomy, saved the life of sister directly giving his own blood. It was 1881, and only in 1913 a German physician who moved to America, Richard Lewishohn, discover the method to store blood, preventing coagulation and cooling it. This will enable them to use deferred during the two world wars also exploiting the creation of special blood banks. Moreover, the Austrian biologist Karl Landsteiner in 1901 was finally able to determine his studies that the blood could belong to specific groups A, B, AB, 0 and for this important discovery would receive in 1930 the Nobel Prize. At the end of the thirties, with Alexander S. Wiener, he would have discovered the Rh factor. The dangerous immune reactions seemed averted or development of transfusion practice seemed to have no more obstacles. During World War II the blood transfusion was much used in the trenches, however, limited to transfuse blood if there were people who could give it, without creating banks or fast transport unit for tarsportal. The lack of blood banks and fast shipping in war field were among the major causes of death during the conflict. In 1936, the Spanish Civil War broke out. The doctor Norman Bethune, the Canadian fervent communist, agreed to lend his work, under the invitation of the Committee for Democracy, head of the Canadian Medical Unit in Madrid. Bethune joined the Mackenzie-Papineau Battalion, which was comprised of Canadian communists and other leftists and left for Madrid on November 3, 1936. During the conflict the doctor Bethune noted that frequent cause of death on the battlefield was the loss of blood of the wounded. He noticed that a trivial injury could lead to death a soldier from bleeding. Bethune conceived the idea of administering blood transfusions on the spot. Mindful of the experience of the Napoleonic wars and shortages of World War Bethune developed the first mobile medical units. The unit contained 500 dressings for wounds, and there were equipment and medicine for 100 operations. Bethune organized a service for the collection of blood from donors and deliver it to the battlefront, thereby saving many lives. Bethune work in Spain for the development of mobile medical units was a precursor to the later development of Mobile Army Surgical Hospital (MASH) units.

**Conclusions**

If today in medicine and orthopedic surgery and it is war or normal civilian activities, it must be passed to the experience of many doctors with only the power of observation and the ability to use a few simple techniques have saved the lives of many people.
Fig. 1 Leeches

Fig. 2 First instrument for blood transfusion
Fig. 3 Giovanni de' Medici’s Portrait

Fig. 4 Giovanni de’ Medici’s amputee limb

Fig. 5 Norman Bethune with first ambulance motor vehicle
Fig. 6 Norman Bethune

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