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Do some of physiotherapy and rehabilitation programs improve the health state of patients suffering from cerebral clot?

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Abstract

Cerebral stroke represents one of the most important diseases resulting from blood clot in the middle cerebral artery, this is due to atherosclerotic clot and the brain has area of deprived blood , therefore blood becomes unable to pass the clot, in this case leads to total or partial paralysis. Rehabilitation programs are one of the most effective therapies for cerebral stroke. These programs include rehabilitation exercises, therapeutic massage and kinet otherapy. The present study deals with the application of organized rehabilitation program and identify it's effect on the movement system and joints. This study examined the effect of rehabilitation program to improve the efficiency of the Locomotor system of patient who complain of cerebral stroke.

Key Words: Cerebral stroke, atherosclerotic, therapeutic

1. Introduction

In the last few years, there are several kinds of physical and rehabilitation exercises related to human medicine as a means of effective treatment for some chronic diseases.

Research problem:

Cerebral stroke represents one of the most important diseases resulting from blood clot in the middle cerebral artery, Its considered as the main problem recently in the world and its increased resulting of stages of life and inactivity and no exercise.

The researcher observed that from his searching during his study about this daisies and its relation with rehabilitation exercise that the disease which happened during arteries clotting which delivered blood to the brain and decreasing of the suppling brain by blood. Also during his working in the physiotherapy and rehabilitation clinical he observed that there are leaking and decrease in this programs of patients who suffering from Cerebral stroke, therefore we need cooperation with all responsible for heath and physiotherapy and rehabilitation clinical and departments.

Aims of the study:

The main aim of the present study is:

1- Related to the suggestion of rehabilitation exercises program to improve the health status of cerebral stroke patients,
2- Increase the efficiency of their movement system and develop the movement range of joints**.**

Hypothesis:

1- The practice of rehabilitation program leads to high qualifying for those who have complain of cerebral stroke,
2- Reduces the cases of hard joints and weak muscles.

Blood Coagulation:

Blood coagulation is a physiological mechanism responsible for the arrest of bleeding from a broken blood vessel. When a small blood vessel is damaged, the injury initiates a series of events leading to the formation of a clot (haemostasis). This clot seals off the damaged area and prevents further blood loss El-Sayed, et al (1999). Stoppage of bleeding is vital when blood vessels are damaged. It involves several physiological processes including blood vessel spasm, formation of a platelet plug, blood coagulation and eventually growth of fibrous tissue into the blood clot to stop the bleeding permanently (Sherwood, 1993). The clotting of blood encompasses a complicated series of chemical reactions among enzymes and cofactors that lead to the generation of thrombin and fibrin clot (Broze, 1995). The initiation of this process is triggered by damaged tissue (Fox, 1981) and is designed to maintain the integrity of the vascular system after injury. The process may be initiated by contact of blood with a foreign surface (intrinsic system) or with damaged tissue (extrinsic system). The blood clotting process can be divided in to three main stages. Stage one consists of the production of prothrombin activator, stage two consists of the conversion by prothrombin activator of prothrombin to thrombin, and stage three consists of the enzymatic conversion by thrombin of soluble fibrinogen to insoluble fibrin. These three stages of blood coagulation cascade are illustrated in Figure 1.1.

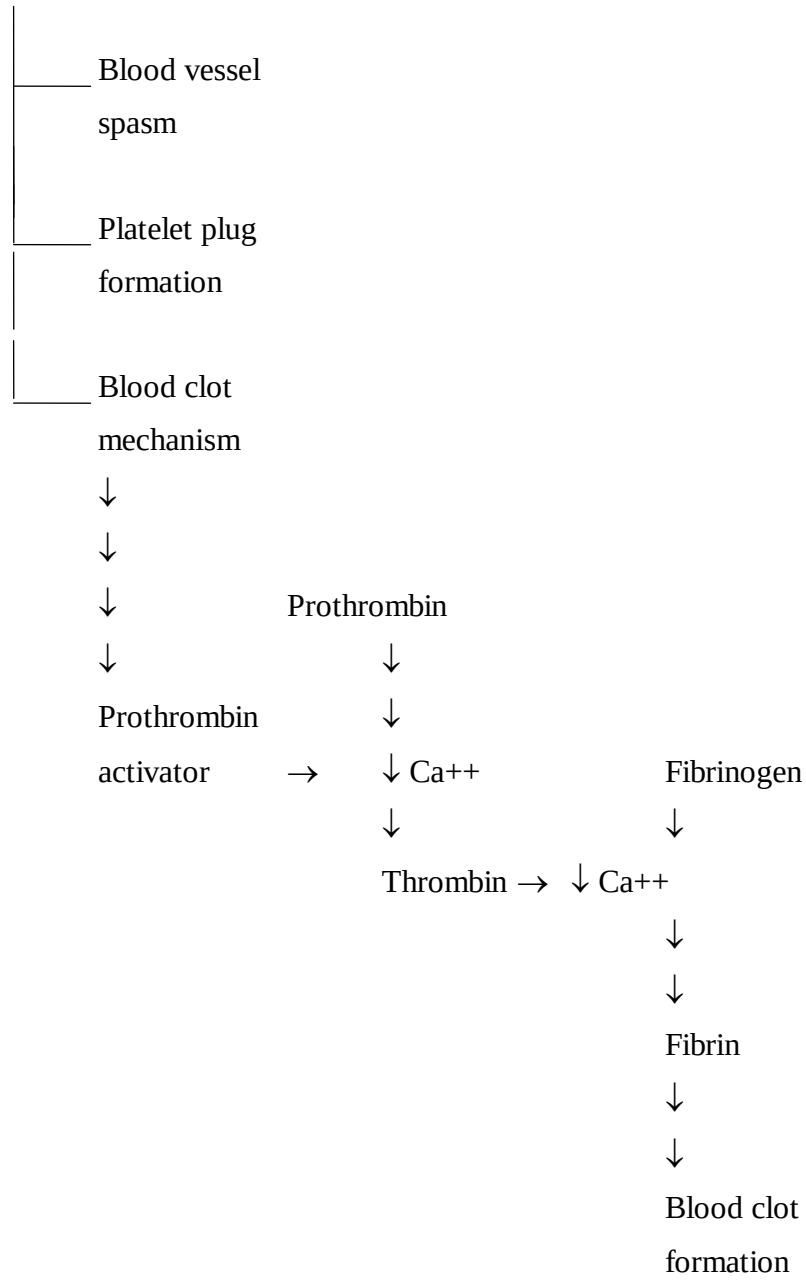

Figure 1. Blood clotting following tissue damage (John and Hole, 1990).

Blood coagulation could also be divided into three pathways: (i) the intrinsic factor X-activating pathway, (ii) the extrinsic pathway, and (iii) the common pathway. It was thought relevant, for the sake of clarity, to discuss these coagulation pathways in detail in the following sections.

Intrinsic pathway

The intrinsic pathway is triggered into action when blood comes in the contact with a foreign surface which leads to activation of coagulation factor X (Figure 1.2. B). The earliest steps in this system are called the contact phase of blood coagulation, since these steps are triggered by surface contact (Saito, 1994). When plasma factor XII comes into contact with an area of damaged blood vessels, it becomes activated and stimulates factor XI, which in turn, in the presence of Ca2+ ions, activates factor IX. At the same time, platelet activation and aggregation result in the release of platelet chemicals, including platelet phosphlipids, which are necessary for the intrinsic clotting pathway. Activated factor IX, in the presence of platelet phosphlipids, factor VIII, and Ca2+ ions, activates factor X. Activated factor X combines with Ca2+ ions, factor V, and platelet phosphlipids to form prothrombin activator. Stage 2 and 3 then are activated, and a clot results. Platelet factor III is released from activated platelets as they aggregate. Platelet factors II IV and I also are involved. Thrombin, which is produced during Stage 2, stimulates further platelet activation, thus prorogating a positive-feedback loop in the intrinsic pathway.

Extrinsic pathway

When a blood vessel is damaged, the damaged endothelial and connective tissue cells of that area release a number of chemicals into the blood. Among these chemicals is a complex mixture of lipoproteins known collectively as tissue thromboplastin or factor III. Tissue thromboplastin, in the presence of calcium (Ca2+) ions, forms a complex with factor VII, which activates factor X. Activated factor X combines with tissue thromboplastin, Ca2+ ions and factor V to form prothrombin activator. In stage 2 prothrombin activator converts the soluble plasma protein prothrombin, which in the presence of Ca2+ ions, converts the soluble plasma protein fibrinogen to the insoluble protein fibrin, thus creating a clot. Factor XIII is necessary for the stabilisation of the clot, and thrombin stimulates factor XIII activation (Figure 1.2. A).

Common pathway

The common pathway refers to the succeeding events that take place after the activation of coagulation factor X to the formation of fibrin (Furie, 1992). The final stage of blood coagulation is initiated by the diffusion of thrombin with subsequent conversion of fibrinogen to fibrin. The sequence of the enzymatic interactions of blood coagulation factors is illustrated in Figure (1.2. A and B):

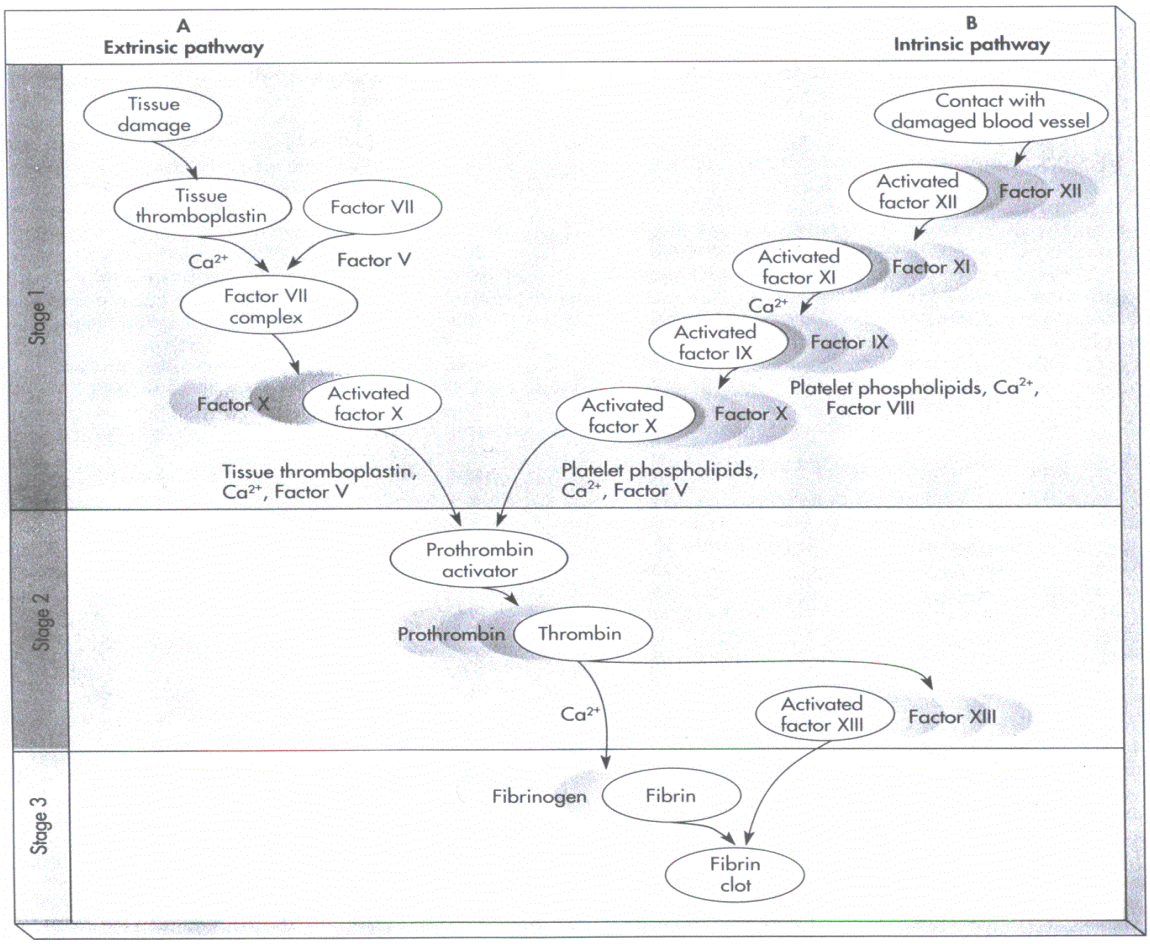

Figure 2. Schematic diagram of clot formation (Seeley et al., 1992).

A Extrinsic clotting pathway B Intrinsic pathway

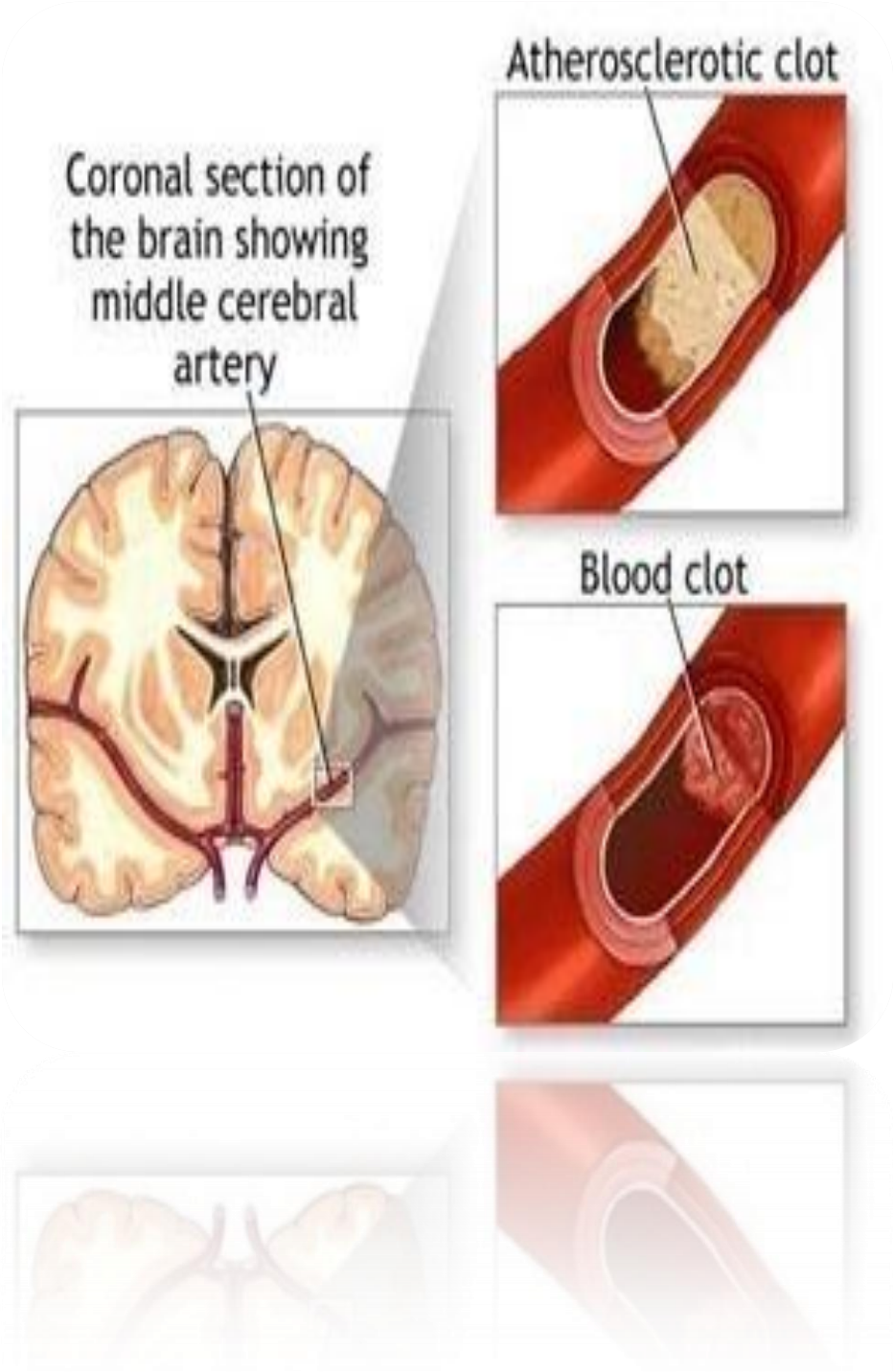

Figure 3. The clotting process in arteries

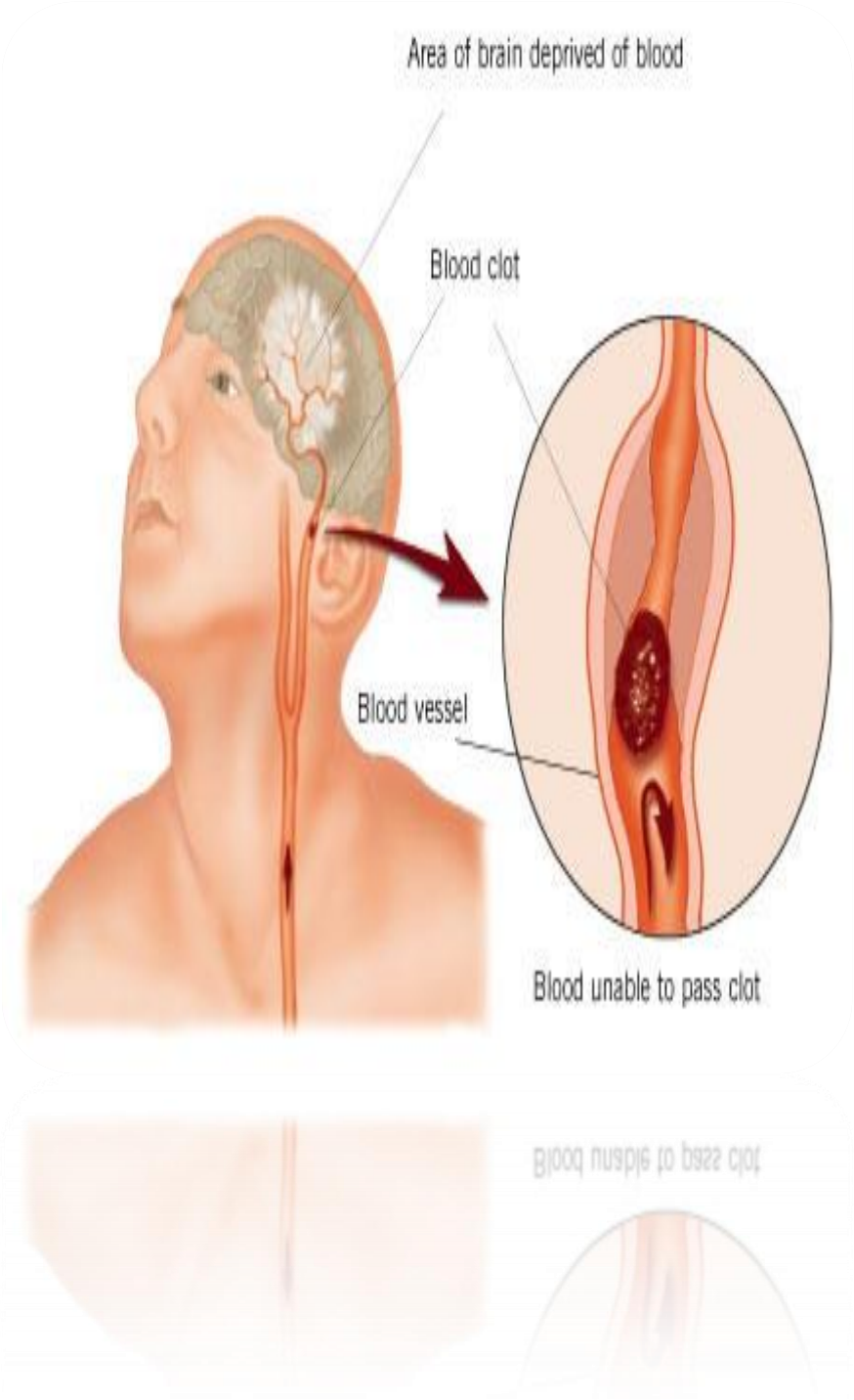

Figure 4. The clotting process in brain

2. Materials and methods

Subjects

Eight patients men age from 55- 65 years were participated in the present study, with their desired they were suffering and were complain of cerebral stroke. Arrangements were made for the patients to apply the rehabilitation and physiotherapy programs in Ain Zara Clinic at Tripoli.

They were coming to making the treatments on Ain Zara Clinic in Tripoli city. Patients recruitment after explanation of the experimental procedures, exercise protocol and test procedures, and the equipments will used.

Sample of the research:

This study has been performed upon (8) sick persons who have complain of cerebral stroke. Laboratory arrangements were made for the patients to familiarise themselves with the protocol which will be used. The study was performed at 9-2012 - 10-2013.

Details of the physical and physiological characteristics of the subjects are shown in Table (1):

Table 1. Subjects characteristics

Variables	**Mean ± SD**
Age (year)	50.48±4.2
Height (cm)	175.8 ±0.07
Body mass(kg)	75.2 ± 5.10

Table 1 shows the variables of subjects who participated in the study.

Session time: were divided by three stages:

Stage 1: (10 min infra red, 10 min Tens, 10 min massage, 40 min exercise therapy). Total 70 min.

Stage 2: (10 min Tens, 15 min Massage, 40 min exercise therapy). Total 65 min.

Stage 3: (15 min Massage, 45 min exercise therapy). Total 60 min.

The equipment and resources used in the experiment:

Genomometer system

Dynamometer system

Bicycle Ergomer

Wall bares

Shoulder bicycle

Infra red

Electric stimulation

Statistical analyses of the data

Repeated measures analysis of variance was used to.

Tukey's post hoc test was used to ascertain which mean values were statistically significant. The alpha level of P= 0.05 was the minimum level required to reject the null hypotheses. Values in the text are meaning (±SE), unless otherwise specified.

3. Results and Discussions

The program of rehabilitation and physiotherapy (physical exercises, flexibility exercises, strengthening exercises) have a good and positive effect on cerebral stroke daisies patients as shown: Improved significantly the muscles and joints, Improved the movement system, Improved the general health status of all patients

The most important findings:

The program of rehabilitation (physical exercises, flexibility exercises, strengthening exercises) have good and positive effect on cerebral stroke patients as shown:

1-Improved significantly the muscles and joints.

2-Improved the movement system.

3-Improved the general health status.

Recommendations:

1- The necessity of applying of the content of the present rehabilitation program for contributing in the therapy of cerebral stroke .
2- The researcher recommended to apply the present program after the medical examination.
3- Establishment of specialized rehabilitation canters for cerebral stroke patients.
4- The necessity of applying the programme timidly after cerebral stroke happed and before long time
5- Consideration must be taking for this people and build many rehabilitation clinic to help this people.
3- The importance of speed diagnoses of the cerebral stroke.
6- Make the testing with continuous every three months to avoid these diseases.
7- Improve the health state of those suffering from these diseases to decease treatment.

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