

Introduction

Degenerative osteoarthritis of the knee is the most common form of arthritis. Its prevalence depends of genetic and life-style factors and also increases with age. It is more frequent in female (2:1), but after menopause the male: female ratio is 1:1. Clinically, degenerative osteoarthritis of the knee is characterized by joint pain, stiffness, limitation of movement and deformities, which results with patient's disability. (1)

Biologically it is progressive cartilage damage. The knee cartilage is thickened with less ability to regenerate. Therefore the treatment of the damaged cartilage is very difficult.

Treatments of knee osteoarthritis vary according to its stage. It begins from non-operative treatment with pain-killers and anti-inflammatory (NASAID), chondroprotectives, physical therapy, intraarticular applications of corticosteroids, PRP or viscos-supplements, to operative procedures as arthroscopy with micro fracturing, replacing the damaged cartilage with autologous implants, partial or total knee replacement.(2)

In the past 10 years clinical use of platelet rich plasma has given the patients with knee osteoarthritis a new biological approach for cartilage regeneration. Platelet-rich plasma (PRP) is an autologous biologic derivate that can be prepared very easy from patient's peripheral blood, by one or two subsequent centrifugation steps using basic laboratory equipment. Autologous PRP may be defined as a platelet concentration product containing at least 200% of the peripheral blood platelet count. This type of concentrate is a natural source of growth factors which play a critical role in the healing process of the cartilage. (1, 3, 4)

Aim

The aim of this paper is to analyze the benefit of using platelet-rich plasma injections in the treatment of degenerative knee osteoarthritis.

Material and methods

We analyzed 50 patients with degenerative knee osteoarthritis treated in the University clinic for orthopedic surgery in Skopje. Inclusion criteria were: patients with history of gonarthrosis who had radiographs with first, second and third grade of knee osteoarthritis (according to the Kellgren-Lawrence scale). Exclusion criteria were: patients with severe gonarthrosis (grade 4 according to Kellgren-Lawrence scale).

Methods

WOMAC Index (Western Ontario and McMaster Universities Arthritis Index) was applied in all patients for measuring the pain, stiffness and functional limitation of the knee in the beginning of the treatment and after PRP treatment. Platelet-rich plasma injections were applied in all patients, with usual 3 courses of injections after 4-weeks interval between them.

Preparation of platelet-rich plasma

The patient's blood was collected in tubes with anticoagulant and centrifuged immediately. The centrifuged product is usually stratified into three layers in its tubes. Erythrocytes are the densest layer and remain at the bottom of the centrifuge tubes, the buffy coat of white blood cells is at the top of the packed red blood cell, layer. The platelets are at the highest concentration in the plasma just above the buffy coat and decrease in concentration toward the top of the plasma layer (Figure 1). The general protocol for preparing PRP requires the separation of blood components through 1 or 2 centrifugation steps. It was proved that the first centrifugation step leads to the separation of red and white blood cells from plasma and platelets and the second produces an increase in the concentration (three to fivefold) of platelets and growth factors (GFs).

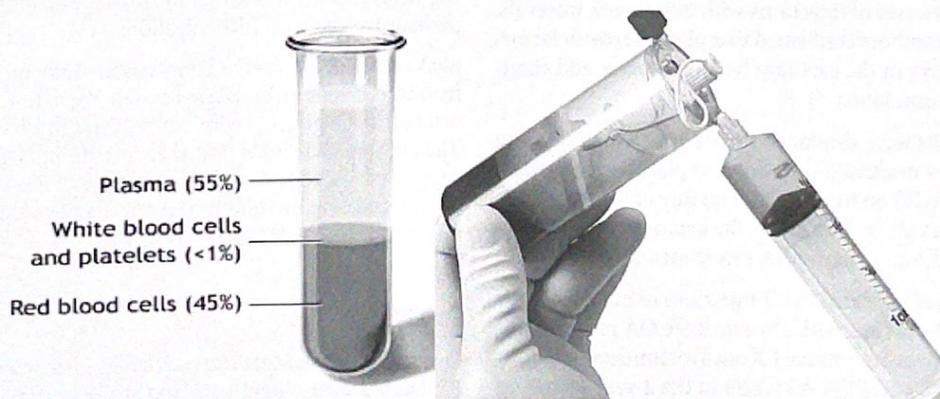


Figure 1. Preparation of PRP