

## The First Report on the Effect of Platelet-Rich Plasma & Mesenchymal Stem Cells in Rheumatoid Arthritis Treatment in Ukraine

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This report provides practical results of the ID Clinic clinical centre regarding the effective use of PRP therapy and Mesenchymal stem cells as an additional or independent area in treating rheumatoid arthritis.

Mesenchymal stem cells, due to their relative ease of isolation, higher replication activity, and chondrogenic potential, represent an alternative reparative cell type. PRP therapy is a growth factor-rich biological medication that has recently received increasing attention and use as a therapeutic adjunct for the treatment of rheumatoid arthritis and degenerative joint diseases.

### The problem of rheumatoid arthritis in Ukraine is determined by several factors, such as:

- Occurrence of the disease among a younger age group;
- Lack of government subsidies for clinical research and case management;
- Untimely request for qualified help from specialists.

### These factors result in an early disability onset for a person.

- Patients aged 12 to 65 come to our clinic with such a diagnosis. They have objective complaints of joint pain, loss of joint mobility, and knee joint burning.
- This pathology was most often caused by such factors as degenerative joint processes, post-traumatic syndrome, and also by the focal cartilaginous knee defect.

According to the treatment protocol, the drugs of choice for acute conditions are oral analgesics, which provide a quick anti-inflammatory effect and the removal of the pain syndrome. However, they lead to a number of adverse reactions. To achieve the maximum effect, electrophoresis and physiotherapy are used. One of the risk factors for the relapse of rheumatoid arthritis is its autoimmune nature. To prevent the development of such scenarios, the head physician of the clinic, Dr. Islam Al-Dababseh, introduced cell therapy into the treatment protocol. The essence of the procedure is the injection into the articular bag of a proprietary plasma medication which is enriched with platelets as well as of a mesenchymal stem cell medication.

The medication was received from each patient individually and prepared according to the approved protocol. The PRP was released according to an adapted protocol (Znang, 2010). In brief

anticoagulated human whole blood was distributed into 15 ml conical tubes and centrifuged at 480g for 20 min. Pelleted red blood cells were discarded and the supernatant was aspirated and concentrated to obtain a platelet concentration of  $1 \times 10^6$  platelets/ $\mu$ L. To activate platelets concentrated CaCl<sub>2</sub> was added to a final concentration of 22.8 mM, followed by incubation at 37°C overnight. After another centrifugation at 2000g for 10 min, the fibrin clot was discarded and the supernatant, referred to as PRP releasate, was stored until future use. MSCs were obtained from fatty tissue of patients.

As a result of using the finished product, the following effects were noted. Positive changes were observed after a single dose. Patients' joints felt better already after the second procedure, with pain management and increased mobility of the joint.

Thus, we have tested the therapy method for acute and chronic conditions of rheumatoid arthritis among patients of different age groups. Positive changes were demonstrated in patients who received PRP and MSCs therapy. In the future, we plan on demonstrating follow-up results of the clinical practice. This is the first report on the use of cell therapy to treat rheumatoid arthritis in Ukraine.

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