

ORIGINAL ARTICLE

Use of platelet-rich plasma in the treatment of rotator cuff pathology. What has been scientifically proven?☆



I. Miranda^{a,b,*}, E. Sánchez-Alepuz^{a,b}, F.J. Lucas^a, V. Carratalá^a, C.A. González-Jofre^{c,d}

^a Servicio de Cirugía Ortopédica y Traumatología de Unión de Mutuas, Valencia, Spain

^b Servicio de Cirugía Ortopédica y Traumatología, Hospital IMED Valencia, Burjassot, Valencia, Spain

^c Servicio de Cirugía Ortopédica y Traumatología, Hospital Carlos Van Buren, Valparaíso, Chile

^d Servicio de Cirugía Ortopédica y Traumatología, Mutual de Seguridad de la Cámara Chilena de la Construcción, Valparaíso, Chile

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KEYWORDS

Platelet rich plasma;
Rotator cuff;
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Abstract

Purpose: To analyse the current scientific and/or clinical evidence supporting the use of platelet-rich plasma (PRP) in the treatment of rotator cuff pathology.

Methods: After a systematic review in PubMed, studies assessing PRP efficacy in the treatment of rotator cuff pathology published since 2013 to date were identified. Data were grouped based on type of study (laboratory, clinical or meta-analysis); accordingly study design, pathology treated and clinical outcomes were summarised.

Results: Thirty-five articles have been analysed: 10 laboratory studies, 17 clinical assays and 8 meta-analyses. While laboratory studies report positive or partially positive results for the use of PRP, 70.6% of clinical studies and 75% of meta-analysis found no statistically significant differences between the PRP group and the control group.

Discussion: The positive results of laboratory studies do not translate well to clinical practice. There is no concordance among the few positive results reported in the clinical studies, and even some contradictory effects have been reported.

Conclusions: There is no solid scientific and/or clinical evidence supporting the use of PRP in the treatment of rotator cuff pathology in routine clinical practice.

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* Corresponding author.

E-mail address: nachomigo@hotmail.com (I. Miranda).

PALABRAS CLAVE

Plasma rico en plaquetas;
Manguito de los rotadores;
Hombro

Utilización del plasma rico en plaquetas en el tratamiento de la patología del manguito de los rotadores. ¿Qué hay demostrado científicamente?

Resumen

Objetivo: Obtener una visión objetiva de las evidencias científicas y/o clínicas actuales sobre el uso de plasma rico en plaquetas (PRP) en el tratamiento de la patología del manguito de los rotadores.

Método: Revisión sistemática en Pubmed e identificación de estudios que evalúen la eficacia de PRP en el tratamiento de la patología del manguito de los rotadores desde 2013 hasta la actualidad. Los datos se agrupan según el tipo de estudio (laboratorio, clínico o metaanálisis); se obtienen datos sobre el diseño del estudio, la patología tratada y los resultados clínicos.

Resultados: Se han analizado 35 artículos: 10 estudios de laboratorio, 17 estudios clínicos y 8 metaanálisis. Mientras que los estudios de laboratorio observan resultados positivos o parcialmente positivos para el uso de PRP, el 70,6% de los estudios clínicos y el 75% de los metaanálisis no encuentran diferencias estadísticamente significativas entre el grupo con PRP y el grupo control.

Discusión: Los resultados positivos de los estudios de laboratorio tienen una baja traslación a los estudios clínicos. No hay concordancia entre los escasos resultados positivos observados en los diferentes estudios clínicos, habiéndose observado incluso resultados contradictorios.

Conclusiones: No existen evidencias científicas y/o clínicas sólidas para el uso de PRP en el tratamiento de la patología del manguito de los rotadores en la práctica clínica habitual.

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Introduction

Pain and functional impotence of the shoulder are very common symptoms (between 4% and 26% of the general population suffer from this)^{1,2} and are a diagnostic challenge since they may present for many reasons. Rotator cuff injuries are among the causes of these symptoms.³ The rotator cuff injury or tear is a common pathology which increases with age⁴ and with overuse of the shoulder.⁵

The treatment of these injuries is initially symptomatic and rehabilitating. When conservative treatment fails, rotator cuff injuries must be treated surgically with tendon repair.⁴ Several open surgery techniques have been described for the repair of the rotator cuff, using mini-approach and arthroscopic techniques. Many studies have been conducted to evaluate which offers greater resistance or the best outcome.^{4,6}

Over the last few years new adjuvant treatments have been evaluated which may help with cures and wound healing of the rotator cuff in attachment with the bone and which reduce the rate of re-tears.⁷⁻⁹ Several products are under study: morphogenetic proteins (BMP), osteoprotegerins, mesenchymal cells, different animal or human cell matrices, etc.^{7,10-12} The most abundant studies are the ones which try to assess the efficacy of platelet-rich plasma (PRP) or fibrin-rich plasma (PRF) in the cure of rotator cuffs. Particular study is being made of the possible benefit its application could have in the arthroscopic suturing of the rotator cuff.^{8,9} The platelets are a source of growth factors which are capable of stimulating cellular proliferation and providing a temporary matrix that may fill the defect and serve as a matrix for cellular migration and tissue remodelling. As a result, the PRP may have, at least theoretically, great potential for helping tissue repair.^{9,12,13}

The aim of this study was to obtain a complete vision of scientific and/or clinical evidence offered by the current literature on the use of PRP in the treatment of the rotator cuff pathology and to assess whether its use is justified in standard clinical practice.

Methods

A systematic review of useful studies was made on the treatment of the rotator cuff pathology with PRP. On 18th January 2016 a search in Pubmed was made with the combination of the terms *platelet rich plasma* and *rotator cuff*. The articles published from 2013 until the present day were selected. A cross-check was also made of the references of this article (Fig. 1).

The analysis also included studies published in Spanish or English, with a scientific level of evidence from I to IV, which assessed some aspect of the treatment of rotator cuffs with PRP (alone or combined with other treatments). The review of the letters to the editor was excluded, as were editorial comments, review articles, clinical cases and chapters from book. Studies which did not present outcome or which presented outcome combined with the application of PRP on several locations (lateral epicondyl, patellar tendon, etc.) (Fig. 1) were also included.

To carry out analysis the studies were grouped according to types: (1) laboratory study, (2) clinical study (clinical assay, cohort study or case series) or (3) meta-analysis. Data relating to the publication was obtained (journal and impact factor about the same according to the *Journal Citation Report – JCR-2014*) and scientific level of evidence, study design, aspect of the rotator cuff pathology studied, where, how and when the PRP was administered and whether if

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