Summary:

Among patients who underwent arthroscopic knee or shoulder surgery, a multimodal opioid-sparing postoperative pain management protocol, compared to standard opioid prescribing, significantly reduced postoperative opioid consumption over 6 weeks.

Purpose: To evaluate the impact of a multi-modal, opioid-sparing approach to postoperative pain management compared to the current standard of care in patients undergoing arthroscopic shoulder and knee surgery. Methods: This randomized controlled trial was performed at 3 clinical sites from March 2021 to April 2022. Adult patients undergoing outpatient arthroscopic shoulder or knee surgery were followed to 6 weeks postoperatively. The opioid-sparing group (100 participants randomized) received a prescription of 1 mg naproxen, acetaminophen and pantoprazole, 2) a limited “rescue prescription” of hydroxymorphone, and 3) a patient education infographic. The control group (100 participants randomized) received the current standard of care as per the treating surgeon, which consisted of an opioid analgesic. The primary outcome was postoperative oral morphine equivalent (OME) consumption at 6 weeks postoperatively. There were seven secondary outcomes, including pain at 2 and 6 weeks postoperatively, patient satisfaction at 6 weeks postoperatively, opioid refills at 6 weeks postoperatively, quantity of OMEs prescribed at 6 weeks postoperatively, adverse events at 6 weeks postoperatively and patient reported medication adverse effects at 2 weeks postoperatively. Results: Among the 200 patients who were randomized (mean age, 45; 73 (38%) females), 193 (97%) of patients completed the trial. Of these 193 patients, 98 were randomized to receive the standard of care and 95 received the opioid-sparing protocol. Patients in the opioid-sparing protocol consumed significantly fewer opioids (median 0mg; IQR: 0.80; than patients in the control group (median: 40; IQR: 7.5-105.0); Z = 6.55, P < .001). Of the 6 prespecified secondary endpoints, 5 showed no significant difference. The mean amount of OMEs prescribed was 341.17mg, 95% CI: 310.2-372.1 in the standard of care group and 40.4mg; 95% CI: 39.6-41.2 in the opioid sparing group (MD 300.8mg; 95% CI: 269.4-332.3; P < .001). There were significantly more patients reported medication-related adverse effects in the standard of care group (32% vs. 19%, P = .048). Conclusion: Among patients who underwent arthroscopic knee or shoulder surgery, a multimodal opioid-sparing postoperative pain management protocol, compared to standard opioid prescribing, significantly reduced postoperative opioid consumption over 6 weeks.

Category: Sports Medicine

Do More Platelets in the Peripheral Blood Mean More Growth Factors in Platelet-Rich Plasma?

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All Authors:
Paweł Reichert Prof POLAND
Maciej Dejnek MD POLAND
Helena Moreira PhD POLAND
Sylwia Placzewska PhD POLAND
Aleksandra Krolikowska Prof. POLAND

Summary:
The content of platelets and WBC in whole blood strongly correlates with their content in PRP, and thus with a higher content of some of the growth factors: TGF-β1 (free active), EGF, FGF-basic, VEGF, HGF, PDGF-AA, PDGF-BB. Complete whole blood count analysis before PRP treatment may be helpful in making decision about its use.

Data:
Title Do more platelets in the peripheral blood mean more growth factors in platelet-rich plasma? Background The justification behind platelet-rich plasma (PRP) injections in sports injuries is related to the high content of growth factors released locally from platelets a-granules. These molecules, involved in natural healing processes, are expected to accelerate tissue regeneration and recovery of athletes. The wide range of platelet counts in healthy blood, a variety of preparation protocols, and administration techniques may be among the causes of inconsistent results in PRP treatment. The study aimed to assess the relationship between the content of cellular components in the whole blood and PRP samples and their correlation with the content of growth factors. Material and Methods A blood sample was taken from 43 subjects aged 24 to 60, and PRP was prepared using the Mini GPS III Platelet Concentration System (Biomet Inc., USA). Complete blood count was evaluated in both whole blood and PRP samples. Multiplex bead immunosays and flow cytometer measurements were used for seven growth factors assessment in PRP: Transforming growth factor-β1 (TGF-β1, free active), Epidermal growth factor (EGF), Fibroblast growth factor-basic (FGF-basic), Vascular endothelial growth factor (VEGF), Hepatocyte growth factor (HGF), Platelet-derived growth factor-AA (PDGF-AA), and Platelet-derived growth factor-BB (PDGF-BB). Statistical analysis was performed, searching for correlations between the cellular components of whole blood/PRP and the content of selected growth factors. Results The complete blood count analysis shows a wide range of the content of platelets (PLT 133 – 419.10⁹/L), white blood cells (WBC 4.06 – 9.82 10⁹/L), and red blood cells (RBC 3.93 – 5.82 10¹²/L). In the PLT concentration increased 4.5 times (from 249.67 ±58.51 to 1119.81 ±443.07), the WBC concentration increased 4.75 times (from 6.57 ±1.37 to 31.24 ±10.09), the RBC concentration decreased 4 times (from 4.89 ±0.54 to 2.71 ±0.36).