Platelet-Rich Plasma Injections in Acute Muscle Injury

TO THE EDITOR: Platelet-rich plasma (PRP) injections are increasingly used in patients with sports-related injuries, but data from randomized trials to assess their efficacy are lacking. We performed a randomized trial to assess whether PRP was efficacious in hamstring strain, the most common acute muscle injury.[1,2]

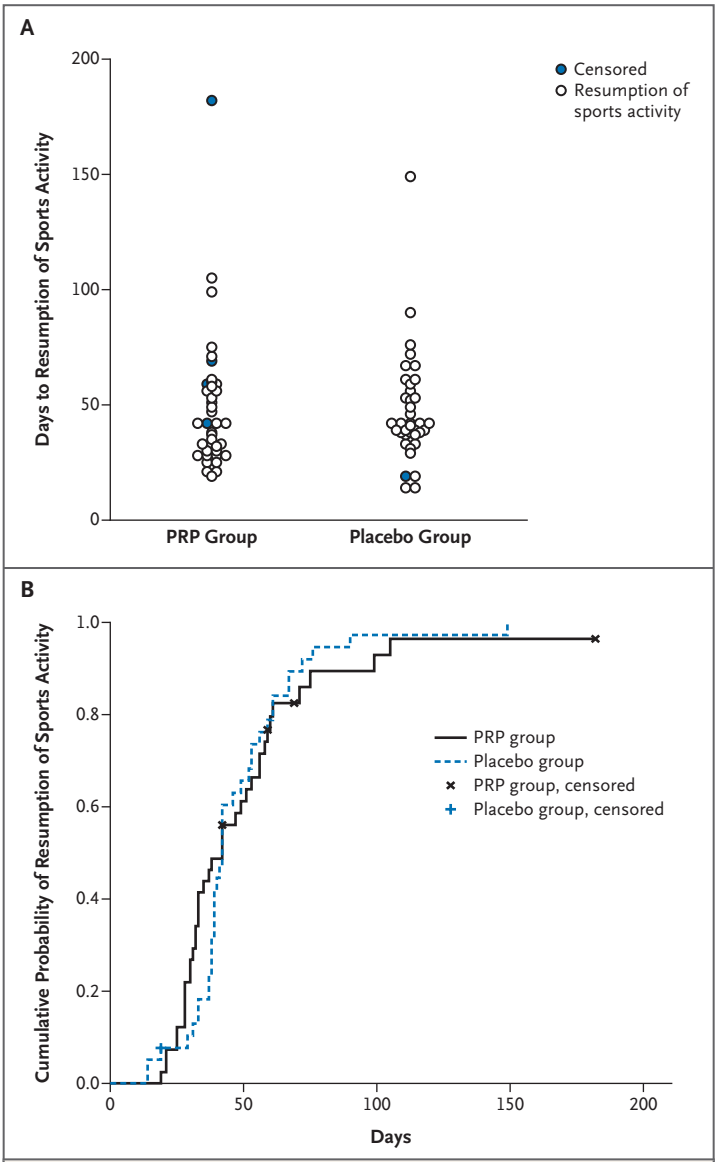

Figure 1. Timing of Resumption of Sports Activity after Acute Hamstring Injury.

Panel A shows a scatter plot of the number of days that were required for patients to resume their sports activity in the group receiving injections of platelet-rich plasma (PRP) and the placebo group. Panel B shows Kaplan–Meier curves for the cumulative probability of a resumption of sports activity. Data for patients who had a non-hamstring injury before they resumed their sports activity were censored at the time of this injury.

In a double-blind, placebo-controlled trial conducted in three study centers, we randomly assigned 80 competitive and recreational athletes with acute hamstring muscle injuries (as confirmed on magnetic resonance imaging) to receive intramuscular injections of PRP or isotonic saline as a placebo. The patients, clinicians, and physiotherapists were all unaware of study-group assignments. Each patient received two 3-ml injections with the use of a sterile ultrasonography-guided technique; the first injection was administered within 5 days after the injury and was followed 5 to 7 days later by the second injection. The PRP was prepared with the use of a commercially available system (Arthrex ACP double-syringe system). Patients in the two study groups performed an identical, daily, progressively phased, criteria-based rehabilitation program, which was based on the best available evidence.[3-5] (A detailed description of the study methods, along with a list of participating centers and investigators, is provided in the Supplementary Appendix, available with the full text of this letter at NEJM.org.)

The primary outcome was the time until patients could resume their sports activity during 6 months of follow-up. In an intention-to-treat analysis, we used a Cox proportional-hazards model to analyze the treatment effect. We assessed the rate of reinjury within 2 months after the resumption of sports activity as a secondary outcome measure. Adjustment was planned for baseline variables that changed the treatment effect by at least 10%, but none met this criterion (Table S1 in the Supplementary Appendix). The study was sponsored by Arthrex Medizinische Instrumente and the Royal Netherlands Soccer Association.

For the primary outcome analysis, no patients were lost to follow-up. The median time until the resumption of sports activity was 42 days (interquartile range, 30 to 58) in the PRP group and 42 days (interquartile range, 37 to 56) in the placebo group (hazard ratio in the PRP group,

0.96; 95% confidence interval [CI], 0.61 to 1.51; P=0.66) (Fig. 1). The reinjury rate was 16% in the PRP group and 14% in the placebo group (odds ratio, 1.17; 95% CI, 0.33 to 4.18; P=0.81). There were no serious adverse events.

Although the 95% confidence interval still allows for a small chance that there was a clinically relevant between-group difference, our study demonstrated no benefit for intramuscular PRP injections, as compared with placebo injections, in patients with acute hamstring injuries.

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Disclosure forms provided by the authors are available with the full text of this letter at NEJM.org.

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CORRECTIONS

Controlled Trial of Psychotherapy for Congolese Survivors of Sexual Violence (June 6, 2013;368:2182-91). Throughout the article, the measure used to assess PTSD symptoms should have been referred to as the Harvard Trauma Questionnaire, rather than the PTSD Checklist (or PTSD Checklist — Civilian Version). Also, reference 19 (page 2190) should have read, "Mollica RF, Caspi-Yavin Y, Bollini P, Truong T, Tor S, Lavelle J. The Harvard Trauma Questionnaire: validating a cross-cultural instrument for measuring torture, trauma, and posttraumatic stress disorder in Indochinese refugees. J Nerv Ment Dis 1992;180:111-6," rather than "Weathers FW, Litz BT, Huska JA, Keane TM. PTSD Checklist — Civilian Version. Boston: National Center for PTSD, 1991." The article is correct at NEJM.org.

Ibrutinib Resistance in Chronic Lymphocytic Leukemia (June 12, 2014;370:2352-4). In the list of authors (page 2354), Mr. Perez's first name should have been Alexendar, rather than Alijandro. The article is correct at NEJM.org.