

INTISARI

Latar Belakang : Prolaps organ panggul (POP) merupakan kondisi klinis yang umum terjadi pada wanita, terutama pascamenopause, akibat melemahnya struktur penyokong panggul. Secara histologis, POP ditandai oleh penurunan ketebalan mukosa vagina dan berkurangnya kadar protein struktural seperti kolagen dan elastin. Salah satu pendekatan biologis potensial dalam terapi regeneratif jaringan adalah penggunaan *Platelet-Rich Fibrin* (PRF), yang mengandung berbagai faktor pertumbuhan seperti VEGF dan TGF- β 1 untuk merangsang penyembuhan jaringan. Penelitian ini bertujuan untuk mengevaluasi pengaruh injeksi lisat PRF manusia terhadap ekspresi elastin dan ketebalan mukosa vagina pada model tikus dengan prolaps organ panggul.

Metode : Penelitian ini merupakan studi eksperimental dengan desain *post-test only control group* menggunakan 18 ekor tikus betina *Sprague-Dawley* yang dibagi ke dalam tiga kelompok: *Sham Procedure* (kontrol), OVX+SVD (model POP), dan OVX+SVD+Injeksi PRF. Model POP dibuat melalui prosedur ovariektomi bilateral dan *Simulated Vaginal Delivery* (SVD). Injeksi lisat PRF manusia sebanyak 75 μ L dilakukan pada mukosa vagina setiap minggu selama 4 minggu. Satu minggu setelah injeksi terakhir, jaringan vagina dianalisis untuk mengevaluasi ekspresi elastin melalui metode imunohistokimia dan ketebalan mukosa melalui pengukuran mikroskopik. Analisis statistik menggunakan uji *Shapiro-Wilk*, *Kruskal-Wallis*, ANOVA, dan uji post-hoc sesuai distribusi data.

Hasil : Hasil menunjukkan peningkatan signifikan ekspresi elastin pada kelompok injeksi PRF dibandingkan kelompok POP tanpa PRF ($p = 0,046$), namun tidak berbeda dengan kelompok kontrol. Sementara itu, tidak ditemukan peningkatan signifikan pada ketebalan mukosa vagina ($p = 0,888$).

Kesimpulan : Injeksi lisat PRF manusia dosis 75 μ L/minggu selama 4 minggu pada mukosa vagina tikus model POP dapat meningkatkan ekspresi elastin secara bermakna, namun tidak memberikan perubahan signifikan pada ketebalan mukosa.

Kata Kunci: prolaps organ panggul, *platelet-rich fibrin*, elastin, ketebalan mukosa vagina, tikus *Sprague-Dawley*.

ABSTRACT

THE EFFECT OF HUMAN PLATELET-RICH FIBRIN LYSATE INJECTION ON ELASTINE EXPRESSION AND VAGINAL MUCOSAL THICKNESS IN A RAT MODEL OF PELVIC ORGAN PROLAPSE

Background: Pelvic organ prolapse (POP) is a common clinical condition in women, especially postmenopausal women, due to weakening of the pelvic support structures. Histologically, POP is characterized by decreased vaginal mucosal thickness and reduced levels of structural proteins such as collagen and elastin. One potential biological approach in tissue regenerative therapy is the use of Platelet-Rich Fibrin (PRF), which contains various growth factors such as VEGF and TGF- β 1 to stimulate tissue healing. This study aimed to evaluate the effect of human platelet-rich fibrin lysate injection on vaginal elastin expression and mucosal thickness in a rat model of pelvic organ prolapse.

Methods: This study was an experimental study with a post-test only control group design using 18 female Sprague-Dawley rats divided into three groups: Sham Procedure (control), OVX+SVBI (POP model), and OVX+SVBI+PRF Injection. The POP model was created through bilateral ovariectomy and simulated vaginal birth injury (SVBI) procedures. 75 μ L of human PRF lysate was injected into the vaginal mucosa every week for 4 weeks. One week after the last injection, vaginal tissue was analyzed to evaluate elastin expression through immunohistochemistry and mucosal thickness through microscopic measurements. Statistical analysis used the Shapiro-Wilk test, Kruskal-Wallis test, ANOVA, and post-hoc test according to data distribution.

Results: Results showed a significant increase in elastin expression in the PRF injection group compared to the POP group without PRF ($p = 0.046$), but no difference compared to the control group. Meanwhile, no significant increase was found in vaginal mucosal thickness ($p = 0.888$).

Conclusion: Injection of human PRF lysate at a dose of 75 μ L/week for 4 weeks into the vaginal mucosa of POP model rats can significantly increase elastin expression, but does not cause significant changes in mucosal thickness.

Keywords: pelvic organ prolapse, platelet-rich fibrin, elastin, mucosal thickness, Sprague-Dawley rats.