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Pengaruh povidone iodine dan hidrogen peroksida terhadap penyembuhan fraktur dan reaksi jaringan uji histomorfometri pada tikus sprague dawley = The effect of povidone iodine and hydrogen peroxide on fracture healing and tissue reaction a histomorphometric study on sprague dawley rats / Kurniadi Husodo

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Abstrak

[ABSTRAK
Pendahuluan. Irigasi dan debridement yang adekuat dinilai sebagai faktor yang paling menentukan dalam pencegahan infeksi pada fraktur terbuka. Povidone Iodine dan hidrogen peroksida sering digunakan sebagai adjuvant pada proses irigasi untuk membunuh mikroorganisme dan menurunkan angka infeksi. Penelitian ini bertujuan untuk menilai pengaruh povidone iodine dan hidrogen peroksida terhadap penyembuhan fraktur dan reaksi jaringan yang terjadi.
Metode. Empat puluh ekor tikus Sprague Dawley jantan dialokasikan acak ke dalam kelompok perlakuan, yaitu; kelompok I (kontrol), kelompok II (povidone iodine 10%), kelompok III (povidone iodine 1%), dan kelompok IV (hidrogen peroksida 3%). Pada minggu pertama, kedua, dan kelima masing-masing dikorbankan 3 ekor tikus pada setiap kelompok. Evaluasi penyembuhan fraktur dilakukan dengan histomorfometri menggunakan program ImageJ®, variabel yang dinilai meliputi; persentase jaringan fibrosa, jaringan tulang rawan, dan jaringan penulangan pada kalus. Reaksi jaringan dinilai dari jumlah sel limfosit dan makrofag yang dinilai secara semikuantitatif. Analisis statistik dilakukan dengan uji ANCOVA dilanjutkan dengan uji post hoc Dunnett.
Hasil. Persentase luas jaringan penulangan terbanyak ditemukan pada kelompok III, diikuti oleh kelompok I, kelompok IV, dan kelompok II. Persentase luas jaringan fibrosa terbanyak ditemukan pada kelompok II, diikuti oleh kelompok IV, kelompok I, dan kelompok III. Reaksi jaringan terbesar ditemukan pada kelompok II, diikuti oleh kelompok IV, kelompok III, dan kelompok I. Pada uji ANCOVA ditemukan perbedaan antar kelompok yang bermakna. Pada uji Dunnett terdapat perbedaan yang bermakna antara kelompok II dan IV terhadap kontrol.
Simpulan. Povidone iodine 1% menunjukkan gangguan penyembuhan fraktur dan reaksi jaringan yang minimal.
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ABSTRACT
Introduction. Adequate irrigation and debridement are important factors to prevent infection in open fractures. Povidone iodine and hydrogen peroxide are adjuvants often used in irrigation to kill microorganisms and prevent infections. This study aims to determine the effect of povidone iodine and hydrogen peroxide on fracture healing and also reaction of host tissue to their presence.
Methods. Fourty male Sprague Dawley rats were allocated randomly into group I (control), group II (10% povidone iodine), group III (1% povidone iodine), and group IV (3% hydrogen peroxide). Three rats on each group were sacrificed on the first, second, and fifth week. Evaluation of fracture healing was done by histomorphometry using ImageJ®, variables measured were; percentage of fibrous tissue, cartilage tissue,

and osseous tissue in fracture callus. Reaction of host tissue was analyzed by semiquantative evaluation of lymphocytes and macrophages. Statistical analysis was performed with ANCOVA test followed by Dunnett post hoc test.
Results. The highest percentage of osseous tissue was found in group III, followed by Group I, Group IV and Group II. The highest percentage of fibrous tissue was found in group II, followed by group IV, group I, and group III. The largest tissue reaction was found in group II, followed by group IV, group III, and group I. In ANCOVA test, there was significant difference found between groups. In Dunnett test, significant differences were found between group II and IV to control.
Conclusion. One percent povidone iodine caused minimal impairment of fracture healing and host tissue reaction., Introduction. Adequate irrigation and debridement are important factors to prevent infection in open fractures. Povidone iodine and hydrogen peroxide are adjuvants often used in irrigation to kill microorganisms and prevent infections. This study aims to determine the effect of povidone iodine and hydrogen peroxide on fracture healing and also reaction of host tissue to their presence.
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