

RINGKASAN

PENGARUH PAPARAN ASAP ROKOK TERHADAP PEMBENTUKAN KALUS PADA PENYEMBUHAN FRAKTUR TIBIA TIKUS PUTIH JANTAN (*RATTUS NORVEGICUS*)

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Asap rokok mengandung sekitar 4865 bahan kimia dengan nikotin, Carbonmonoksida dan Tar sebagai tiga unsur utamanya. 400 diantaranya memberi pengaruh pada tubuh, 100 memberikan efek toksik dan 43 bahan karsinogenik.

Penelitian ini ditujukan untuk membuktikan bahwa paparan asap rokok dapat menghambat pembentukan kalus pada penyembuhan fraktur tikus putih jantan. Indikator yang dipakai adalah kepadatan tulang dan jumlah osteoblas.

Rancangan penelitian yang digunakan adalah The post test only control group design. Tiga puluh dua tikus putih (*Rattus norvegicus*) jantan dibagi menjadi 4 kelompok secara acak yaitu kelompok kontrol yang diterminasi hari ke delapan, kelompok perlakuan paparan asap rokok diterminasi hari kedelapan, kelompok kontrol yang diterminasi hari ke dua puluh satu dan kelompok perlakuan paparan asap rokok yang diterminasi hari ke dua puluh satu. Semua kelompok dipatahkan tulang tibianya secara terbuka dan difiksasi dengan gips. Kelompok perlakuan diberikan paparan asap rokok 1/5 batang/200g/hari selama 8 dan 21 hari. Setelah dikorbankan pada hari ke delapan dan keduapuluhsatu dilakukan pengukuran kepadatan tulang menggunakan DBM Sonic dan jumlah osteoblas secara histologis. Rerata kepadatan tulang pada kontrol 8 hari $1728,25 \pm 37,77$ m/detik, perlakuan 8 hari $1329,63 \pm 49,15$ m/detik, kontrol 21 hari $1804,13 \pm 32,25$ m/detik dan perlakuan 21 hari $1381 \pm 89,95$ m/detik. Rerata jumlah osteoblas kontrol 8 hari $16,438 \pm 1,6$, perlakuan 8 hari $8,850 \pm 0,43$, kontrol 21 hari $24,3 \pm 1,43$, perlakuan 21 hari $12,21 \pm 1,08$ per lapang pandang dengan pembesaran 400X.

Dari data hasil penelitian menunjukkan terdapat perbedaan bermakna kepadatan tulang dan osteoblas antara kelompok kontrol dengan kelompok perlakuan ($p < 0,05$) dan tidak didapatkan perbedaan yang bermakna antara dua kelompok yang diberi perlakuan ($p > 0,05$) dalam variabel penurunan kepadatan tulang tetapi didapatkan perbedaan yang bermakna ($p < 0,05$) antara dua kelompok perlakuan dan variabel jumlah osteoblas.

Berdasarkan hasil penelitian ini maka dapat disimpulkan bahwa paparan asap rokok dapat menghambat pembentukan kalus pada penyembuhan fraktur tikus putih jantan.



SUMMARY

The effect of smoking inhalation on callus formation in fracture healing in male White Rat

Nur Flora Nita Taruli Basa Sinaga

Smoking inhalation consists of about 4685 chemical product with nicotine, carbonmonoxide, and tar are three main product. There are 400 products can influence our body, 100 make toxic effect and 43 can be carsinogenic .

The objective of this research was to explain the effect smoking inhalation to inhibit callus formation in fracture healing in male white rat. Two indicators that would be measured were bone density and osteoblast counting.

The outline of this study was The post-test only devided group design . All of rats were performed open fracture on tibia and fixation with cast . Thirty two *Rattus norvegicus* about 3 months old were devided into 4 groups at random . The control groups sacrificed at 8th and 21st day, smoking inhalation groups were sacrificed 8th and 21st day.. The treatment group were given smoking inhalation 1/5 clove cigarette/200 g BW/day in eight day and twenty one day. After sacrificed at 8thday and 21th day bone density was measured with DBM Sonic and osteoblas count was performed. Mean of bone density control 8th day 1728.25 ± 37.77 m/sec, treatment 8th day 1329.63 ± 49.15 m/sec, control 21st day 1804.13 ± 32.25 m/sec and treatment 21st day 1381 ± 89.95 m/sec. Mean of osteoblast control 8th day 16.438 ± 1.6 , treatment 8th day 8.850 ± 0.43 , control 21st day 24.3 ± 1.43 , treatment 21st day 12.21 ± 1.08 .

The result of these study showed that there was significant difference between the treatment group and non treatment group ($p < 0.05$) and there is no significant difference between treatment group ($p > 0.05$) for bone density, but there was significant difference between treatment group ($p < 0.05$) for osteoblas.

Based on the result , this study concluded that smoking inhalation could cause inhibition of callus formation in male white rat .

ABSTRACT

The effect of smoking inhalation on callus formation in fracture healing in male White Rat

Nur Flora Nita Taruli Basa Sinaga

Smoking inhalation consists of about 4685 chemical product with nicotine, carbonmonoxide, and tar are three main product. There are 400 product can be influence our body, 100 make toxic effect and 43 can be carsinogenic. The effect smoking inhalation to inhibit callus formation is not clearly understand

With The post-test only control group design All were performed open fractured and imobilisation with cast. Thirty two *Rattus norvegicus* were divided into 4 groups. The control groups were sacrificed at 8th and 21st day , treatment groups were sacrificed 8th and 21st day. After sacrificed bone density was measured with DBM Sonic and osteoblas count was performed.

The result of these study show that there was significant difference between the treatment group and non treatment group ($p<0.05$) and there was no significant difference between treatment group ($p>0.05$) for bone density, and there was significant difference between treatment group ($p<0.05$) for osteoblast.

Keywords : smoking inhalation, callus formation, experimental study