

# Derajat perubahan histopatologi jaringan paru kelinci pada keadaan iskemia reperfusi tungkai bawah akut yang mendapatkan perlakuan ischemic preconditioning dan hipotermia = Protective effect of ischemic preconditioning and hypothermia in remote acute lung reperfusion injury induced by lower limb ischemia in rabbit histopathology review

Hutagaol, David, author

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## Abstrak

Latar Belakang : Iskemia yang terjadi di suatu lokasi di tubuh mengakibatkan kerusakan pada lokasi yang berjauhan yang dikenal dengan sebutan cedera remote reperfusi. Paru merupakan salah satu organ target utama terjadinya kerusakan pada cedera remote reperfusi. Penelitian ini bertujuan melihat efek protektif hipotermia dan ischemic preconditioning (IPC) terhadap cedera remote reperfusi di paru.

Metode : Dilakukan penelitian eksperimental pada kelinci New Zealand White (n=18) dengan satu kelompok kontrol (iskemia) dan dua kelompok perlakuan (preconditioning dan hipotermia). Dilakukan ligasi a. iliaca communis kanan selama 4 jam, hipotermia sedang (28oC), dan iskemia preconditioning pada masing-masing kelompok. Kemudian kelinci dibiarkan hidup selama 8 jam. Sampel jaringan paru di ambil untuk pemeriksaan derajat kerusakan paru secara histopatologi.

Hasil : Terdapat perbedaan bermakna derajat perubahan histopatologik jaringan paru yang di berikan perlakuan IPC (p : 0,000) dan perlakuan Hipotermi (p : 0,015) terhadap kelompok kontrol.

Kesimpulan : Ischemic preconditioning dan Hipotermi memberikan efek protektif pada paru dari akibat iskemik reperfusi tungkai bawah akut.

*Introduction.* Acute lower limb ischemia may induced ischemia reperfusion injury to the lung and also initiate a systemic inflammatory response syndrome. The aim of this study was to proofed whether IPC and hypothermia of the limb before I/R injury would also attenuates the acute lung injury in rabbit model of hind limb I/R.

*Method.* This prospective, randomized, controlled, experimental animal study was performed in a university-based animal research facility with 18 New Zealand White Rabbit. The rabbits were randomized (n=6 per group) into three groups: I/R group (4 hours of hind limb ischemia and 8 hours of reperfusion), IPC group (three cycles of 5 minutes of ischemia/5 minutes of reperfusion immediately preceding I/R), and hypothermia ( 28oC) together with 4 hours of hind limb ischemia and 8 hours of reperfusion. Lung tissue were examined based for their histopathological changes. The changes were assessed based on the grading as normal, mild, moderate, and severe damage.

*Result.* Rabbit treated with IPC (p : 0,001) and hypothermia (p : 0,015) have demonstrated a significant decrease in histopathological features of acute lung reperfusion injury.

Conclusion. Ischemic preconditioning and hypothermia have shown protective effect for the lung from remote ischemic reperfusion injury induced by lower limb ischemia.</i>