

INTISARI

PENGARUH PEMBERIAN VITAMIN D TERHADAP JUMLAH MAKROFAG M1 PERIVASKULAR, EKSPRESI TOLL-LIKE RECEPTOR 4 (TLR4) & MONOCYTE CHEMOATTRACTANT PROTEIN-1 (MCP-1) PADA MENCIT DENGAN MODEL *UNILATERAL URETERAL OBSTRUCTION* (UO)

Latar Belakang: Fibrosis ginjal merupakan karakteristik utama dari penyakit ginjal kronis. Dimana disebabkan oleh proses inflamasi, yang diperankan oleh makrofag M1, TLR4 serta MCP-1. Beberapa studi telah menyatakan bahwa vitamin D dapat mengurangi inflamasi pada proses fibrosis ginjal.

Tujuan: Mengetahui pengaruh pemberian vitamin D terhadap Jumlah Makrofag M1 Perivaskular, ekspresi TLR4 dan MCP-1 pada ginjal mencit dengan model *unilateral ureteral obstruction*.

Metode Penelitian: Lima belas ekor mencit jantan galur *Swiss* yang berusia 3-4 bulan dengan berat badan 30-40 gram dibagi ke dalam tiga kelompok yaitu mencit dengan *Sham Operation* (SO, n=5), mencit dengan UO selama 7 hari (UO, n=5), dan mencit dengan UO yang diberi vitamin D aktif kalsitriol 0,5 µg/kgBB/hari i.p. selama 7 hari (UUOD, n=5). UO dilakukan dengan meligasi salah satu ureter mencit dengan menggunakan benang silk 0,4. Jumlah Makrofag M1 perivaskular diperoleh dari sediaan histologis dengan pewarnaan imunohistokimia dengan antibody anti CD 68. Ekspresi TLR4 dan MCP-1 diperoleh dengan menggunakan metode RT-PCR. Data dianalisa menggunakan *software* ImageJ dan diuji statistiknya menggunakan uji *One-way ANOVA* atau *Kruskal Wallis* pada SPSS versi 16.0.

Hasil Penelitian: Terdapat penurunan jumlah makrofag M1 perivaskular secara bermakna ($p < 0,05$) tetapi tidak terdapat penurunan ekspresi TLR4 & MCP-1 secara bermakna ($p > 0,05$) pada kelompok UUOD dibandingkan dengan kelompok UO.

Kesimpulan: Vitamin D aktif kalsitriol mampu menurunkan jumlah makrofag M1 perivaskular, tetapi tidak bermakna dalam menurunkan ekspresi TLR4 dan MCP-1 pada fibrosis interstisial ginjal.

Kata kunci: Gagal ginjal kronis, fibrosis interstisial ginjal, inflamasi, *unilateral ureteral obstruction*, makrofag, MCP-1, TLR4, vitamin D.

ABSTRACT

THE EFFECTS OF VITAMIN D TO THE NUMBER OF PERIVASCULAR M1 MACROPHAGE, TOLL-LIKE RECEPTOR 4 (TLR4) EXPRESSION & MONOCYTE CHEMOATTRACTANT PROTEIN-1 (MCP-1) EXPRESSION IN MICE WITH *UNILATERAL URETERAL* *OBSTRUCTION (UO) MODEL*

Background: Kidney fibrosis is the main characteristic of chronic kidney disease. It is caused by inflammation process which involve M1 macrophage, TLR4 and MCP-1. There are several studies which stated that vitamin D can reduce the inflammation process in fibrotic kidney.

Objective: This study is aimed to elucidate the effects of vitamin D to the number of perivascular M1 macrophage, TLR4 and MCP-1 expression in mice kidney with unilateral ureteral obstruction model.

Methods: Fifteen (3-4 months old; 30-40 g) Swiss background mice were divided into 3 groups: Sham Operation (SO, n=5), mice with UO in 7 days (UO, n=5) and mice with UO plus intraperitoneal calcitriol injection 0,5 µg/kgBB/day in 7 days (UOD, n=5). Animals underwent ureter ligation with 0,4 silk. The number of perivascular M1 macrophage were assessed by immunohistochemistry staining with monoclonal antibody anti CD 68. Expression of TLR4 and MCP-1 were assessed by RT-PCR. Both were analyzed by ImageJ and are statistically tested by One-way ANOVA or Kruskal Wallis on SPSS 16.0 software.

Results: There was lowering the number of perivascular M1 macrophage significantly ($p < 0.05$) but there weren't lowering TLR4 and MCP-1 expression significantly ($p > 0,05$) in UOD group compared with UO group.

Conclusion: Calcitriol decreases the number of perivascular M1 macrophage but can't decrease TLR4 and MCP-1 expression significantly in renal interstitial fibrosis.

Keyword: Chronic kidney disease, renal interstitial fibrosis, inflammation, *unilateral ureteral obstruction*, macrophage, MCP-1, TLR4, vitamin D.