LUMBROKINASE EFFECTS ON PROAPOPTOTIC AND ANTIAPOPTOTIC GENE EXPRESSION IN WIHSTAR RATS WITH TESTICULAR TORSION

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Abstract

Introduction

This study evaluated the therapeutic efficacy of lumbrokinase in the treatment of ischemic and reperfusion (IR) injury in ipsilateran and contralateral testicle of testicular torsion.

Objective

To evaluate the effect of lumbrokinase in protecting testicular cell injury in testicular torsion

Material and Method

Twenty-four male Rattus Novergicus rats were divided equally into two groups, Torsion group (T) and Torsion-Detorsion (TD) group . T group divided later into Torsion only (TO) group and Torsion with Lumbrokinase medication (TL) group, while TD group also divided into torsion-detorsion only group (TDO) and torsion-detorsion with lumbrokinase group (TDL). Each group contain six rats equally. The left testes were rotated 720° for 4 hours in T group and then perform orchiectomy. Rats in the TD groups underwent the same surgical procedure as the T group and also perform detorsion for 1 h after testicular torsion. Left orchiectomy was performed in all rats and the tissue were collected for the measurement of antiapoptotic B Cell Lymphoma-2 (BCL-2) and proapoptotic BCL-2 Associated X protein (BAX) gene expression using Real Time Polymerase Chain Reaction (RT-PCR).

Result

Testicular torsion and detorsion increase apoptotic and antiapoptotic gene expression in both testis. Lumbrokinase proven significantly effective in lowering the apoptotic gene expression especially in TDL group compare to TDO group ($P < 0,05$). There was no significant change in the expression of Bcl-2 by using Lumbrokinase.

Conclusion

Administration of pre-surgical lumbrokinase can protect testicular damage by reducing proapoptotic gene expression.

Keyword :

Testicular torsion, apoptotic and antiapoptotic, Lumbrokinase.

EFEK LUMBROKINASE TERHADAP EKSPRESI GEN PROAPOPTOTIK DAN ANTIAPOPTOTIK PADA TIKUS WISTAR DENGAN TORSIO TESTIS

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Abstrak

Pendahuluan

Studi ini mengevaluasi efikasi terapeutik lumbrokinase dalam pengobatan cedera iskemik dan reperfusi (IR) pada torsio testis ipsilateral dan kontralateral.

Objektif

Untuk mengevaluasi efek lumbrokinase dalam melindungi cedera sel testis pada torsio testis

Material dan Metode

Dua puluh empat ekor tikus jenis Rattus Novergicus jantan dibagi menjadi dua kelompok, kelompok *Torsion* (T) dan kelompok *Torsion-Detorsion* (TD). Kelompok T kemudian dibagi menjadi kelompok *Torsion only* (TO) dan kelompok *Torsion* yang diberikan obat Lumbrokinase (TL), sedangkan kelompok TD juga dibagi menjadi kelompok *Torsion-Detorsion only* (TDO) dan kelompok *Torsion-Detorsion* yang diberikan obat Lumbrokinase (TDL). Setiap kelompok berjumlah enam ekor tikus. Testis kiri diputar 720° selama 4 jam pada kelompok T kemudian dilakukan orkiektomi. Tikus dalam kelompok TD menjalani prosedur pembedahan yang sama dengan kelompok T dan juga dilakukan detorsi selama 1 jam. Orkiektomi kiri dilakukan pada semua tikus dan jaringan diambil untuk dilakukan pengukuran ekspresi gen antiapoptotik *B Cell Lymphoma-2* (BCL-2) dan proapoptotik *BCL-2 associated X* protein (BAX) menggunakan *Real Time Polymerase Chain Reaction* (RT-PCR).

Hasil

Torsi dan detorsi testis meningkatkan ekspresi gen apoptotik dan antiapoptotik di kedua testis. Lumbrokinase terbukti efektif menurunkan ekspresi gen apoptotik terutama pada kelompok TDL dibandingkan dengan kelompok TDO ($P < 0,05$). Tidak ada perubahan signifikan pada ekspresi Bcl-2 dengan menggunakan Lumbrokinase.

Kesimpulan

Pemberian lumbrokinase pra-bedah dapat memberikan efek protektif terhadap kerusakan testis dengan mekanisme mengurangi ekspresi gen proapoptotik.

Kata Kunci:

Torsio testis, proapoptotik dan antiapoptotik, Lumbrokinase.