

ABSTRACT

Background: The use of NSAIDs post-colonic resection has been controversial lately. Despite known for its anti-inflammatory and analgesic effect, NSAIDs have caused an increased incidence of anastomotic leakage. A lot of studies have tried to explore the factors that affect the healing of colonic anastomosis, where VEGF-A is known to play a significant role in the process.

Objective: To assess the reduction in VEGF-A mRNA expression between the groups provided with NSAIDs versus the control group in in vitro rat colonic fibroblast cell culture.

Method: This was a post test only control group design, using fibroblast isolated from the colon of healthy Sprague Dawley rat weighing between 200 and 300 grams. The NSAIDs that were studied were paracetamol, metamizole and ketorolac, where its effect on the amount of VEGF-A mRNA expression was measured with mRNA examination. The mRNA obtained was converted to cDNA, and PCR and electrophoresis was then performed, where the result of electrophoresis was analysed with densitometry using image J software. The data was examined for normal distribution, and significant testing was done with one-way ANOVA followed by post-hoc test.

Result: VEGF-A mRNA band at 380 base pairs was seen at the region of Ketorolac 25 µg/mL. No other bands were observed after the administration of paracetamol, metamizole, lower doses of ketorolac, and in the control group.

Conclusion: The administration of high dose ketorolac caused the highest expression of VEGF-A mRNA in the in vitro colonic fibroblast of Sprague-Dawley rats, whereas metamizole, paracetamol, lower doses of ketorolac, and the control group showed no VEGF-A mRNA expression.

Keyword: Colonic anastomosis, VEGF-A mRNA expression, NSAIDs, mRNA.

INTISARI

Latar Belakang: Penggunaan analgesik golongan Anti-inflamasi Non-Steroid (AINS) pasca reseksi kolon telah menjadi hal yang kontroversi akhir-akhir ini. Meskipun diketahui karena efek anti-inflamasi dan analgesiknya, AINS diketahui telah menyebabkan peningkatan insidensi terjadinya kebocoran anastomosis. Banyak penelitian telah mencoba untuk menemukan faktor-faktor yang dapat mempengaruhi penyembuhan anastomosis kolon, dan VEGF-A dikenal untuk memainkan peran penting dalam proses penyembuhan tersebut.

Tujuan: Untuk menilai penurunan ekspresi VEGF-A mRNA antara kelompok yang disediakan dengan AINS versus kelompok kontrol pada kultur fibroblas kolon tikus secara *in vitro*.

Metode: Penelitian ini merupakan *post-test control group design*, yang menggunakan fibroblast dari kolon tikus *Sprague Dawley* dengan berat antara 200 dan 300 gram. Pengaruh AINS (parasetamol, metamizol, dan ketorolac) terhadap ekspresi VEGF-A mRNA diukur dengan pemeriksaan mRNA. mRNA yang didapatkan diubah menjadi cDNA, dan setelah PCR dan electrophoresis dilakukan, maka hasil yang diperoleh telah dianalisis dengan densitometri menggunakan *Image J software*. Data tersebut diuji tes normalitas, dan kemudian dilakukan test *one-way ANOVA* dan selanjutnya *post-hoc test*.

Hasil: Terlihat VEGF-A mRNA band setinggi 380 *base pairs* pada pemberian Ketorolac 25 µg/mL. Tidak tampak ekspresi VEGF-A mRNA lainnya pada regio pemberian parasetamol, metamizole, ketorolac dosis rendah, dan kontrol.

Kesimpulan: Pemberian ketorolac dosis tinggi menyebabkan ekspresi VEGF-A mRNA tertinggi pada kultur fibroblas kolon tikus *Sprague-Dawley* secara *in vitro*. Pada pemberian parasetamol, metamizole, ketorolac dosis rendah, dan kontrol tidak terlihat adanya ekspresi VEGF-A mRNA.

Kata Kunci: Anastomosis kolon, ekspresi VEGF-A mRNA, AINS, mRNA.