

**PERBANDINGAN EKSPRESI mRNA Bax, mRNA Bcl-2, RASIO mRNA
Bax/Bcl-2, DAN INDEKS APOPTOSIS SEL TROFOBLAS ANTARA
PLASENTA AKRETA SPEKTRUM DAN KEHAMILAN NORMAL DI
RSUP DR SARDJITO**

ABSTRAK

Latar Belakang: Meningkatnya angka kasus plasenta akreta spektrum dan etiologinya diduga disebabkan oleh defek pada interface endometrium-miometrium. Diduga terjadi penurunan apoptosis sitotrofoblas. Bcl-2 Family berperan penting dalam regulasi apoptosis PAS. Rasio ekspresi BAX terhadap Bcl-2 menentukan kerentanan sel terhadap apoptosis. Peneliti mengkaji perbedaan ekspresi BAX dan Bcl-2, dan ekspresi fragmentasi DNA sebagai indikator indeks apoptosis pasien PAS dan kehamilan normal.

Metode Penelitian: Penelitian ini adalah studi analitik cross-sectional yang menggunakan sampel plasenta Formalin-fixed, paraffin-embedded dari kelompok PAS dan kehamilan normal. Ekstraksi mRNA pada sampel tiap kelompok, dan penilaian ekspresi mRNA BAX dan Bcl-2 dengan RT-qPCR, perhitungan rasio ekspresi mRNA BAX/Bcl-2, dan pemeriksaan fragmentasi DNA menggunakan LM-RT-PCR.

Hasil Penelitian: Rerata fold change mRNA BAX PAS lebih rendah dibandingkan kehamilan normal ($3,61 \pm 2,61$ vs. $11,75 \pm 10,66$ $p=0,0016$). mRNA Bcl-2 PAS lebih tinggi dibandingkan kehamilan normal ($35,95 \pm 28,98$ vs. $5,50 \pm 3,05$ $p=0,00131$). BAX/Bcl-2 PAS lebih rendah dibandingkan kehamilan normal ($0,16 \pm 0,12$ vs $3,43 \pm 4,43$ $p=0,001$). Rerata CT fragmentasi DNA PAS lebih tinggi dibandingkan kehamilan normal ($33,78 \pm 1,12$ vs $28,40 \pm 0,69$ $5,38$ $p=0,001$). Kkorelasi signifikan ekspresi mRNA Bcl-2 dan indeks apoptosis dengan arah positif. Terdapat hubungan ekspresi mRNA BAX, Bcl-2, rasio ekspresi BAX/Bcl-2, dan indeks apoptosis sel trofoblas pada PAS dan kehamilan normal. Rasio BAX/Bcl-2 turun sesuai penanda antiapoptosis lebih dominan daripada proapoptosis.

Kesimpulan: Pada PAS, ekspresi mRNA BAX dan rasio BAX/bcl-2 lebih rendah secara signifikan tetapi pada Bcl-2 dan CT value meningkat secara signifikan dibandingkan pada subjek plasenta normal serta didapatkan korelasi signifikan antara Bcl-2 dan indeks apoptosis.

Kata kunci: mRNA, BAX, BCL-2, Indeks Apoptosis, DNA Fragmentation, Plasenta akreta spektrum

**COMPARISON OF THE EXPRESSION OF Bax mRNA, Bcl-2 mRNA,
Bax/Bcl-2 mRNA RATIO, AND APOPTOSIS INDEX OF TROPHOBLAST
CELLS BETWEEN PLACENTA ACRETA SPECTRUM AND NORMAL
PREGNANCY IN DR SARDJITO HOSPITAL**

ABSTRACT

Background: The increasing number of cases of placenta accreta and its etiology are suspected to be caused by defects in the endometrial-myometrial interface. It is suspected that there is a decrease in cytotrophoblast apoptosis. The Bcl-2 Family plays a vital role in the regulation of PAS apoptosis. The expression ratio of BAX to Bcl-2 determines the susceptibility of cells to apoptosis. Researchers examined the differences in the expression of BAX and Bcl-2 and the expression of DNA fragmentation as indicators of the apoptotic index of PAS patients and normal pregnancies.

Methods: This cross-sectional analytic study used Formalin-fixed, paraffin-embedded placenta samples from the PAS and normal pregnancy groups. Extraction of mRNA in samples from each group, assessment of BAX and Bcl-2 mRNA expression by RT-qPCR, calculation of BAX/Bcl-2 mRNA expression ratio, and examination of DNA fragmentation using LM-RT-PCR.

Results: The mean fold change of BAX PAS mRNA was lower than in normal pregnancies (3.61 ± 2.61 vs. 11.75 ± 10.66 $p=0.0016$). Bcl-2 PAS mRNA was higher than in normal pregnancy (35.95 ± 28.98 vs. 5.50 ± 3.05 $p=0.00131$). BAX/Bcl-2 PAS was lower than normal pregnancy (0.16 ± 0.12 vs. 3.43 ± 4.43 $p=0.001$). The CT mean of PAS DNA fragmentation was higher than normal pregnancies (33.78 ± 1.12 vs. 28.40 ± 0.69 5.38 $p=0.001$)—significant correlation of Bcl-2 mRNA expression and apoptosis index with a positive direction. There is a relationship between BAX, Bcl-2 mRNA expression, BAX/Bcl-2 expression ratio, and the apoptotic index of trophoblast cells in PAS and normal pregnancy. The BAX/Bcl-2 ratio decreased according to a more dominant antiapoptotic marker than proapoptosis.

Conclusion: In PAS, BAX mRNA expression and BAX/bcl-2 ratio was significantly lower, but Bcl-2 and CT values increased significantly compared to normal placental subjects, and a significant correlation was found between Bcl-2 and the apoptosis index.

Keywords: mRNA, BAX, BCL-2, Apoptotic Index, DNA Fragmentation, Placenta accreta spectrum