

INTISARI

Hubungan dan Perbandingan Kadar CEA dengan Level ekspresi MicroRNA 21 dan MicroRNA Tumor Supresor 195 pada Stadium Karsinoma Kolorektal

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Latar Belakang : Kanker kolorektal (KKR) menduduki peringkat ketiga sebagai penyebab kematian akibat kanker di Amerika Serikat. Peningkatan kadar CEA dalam darah berhubungan dengan progresivitas penyakit pasien dengan kanker kolorektal (Thomas et al., 1990). Tingginya kadar CEA *pre-operatif* merupakan suatu indikator prognostik yang buruk. Micro RNA (miR) telah ditemukan pada onkogenesis dan progresi KKR, invasi, metastasis dan angiogenesis. Ekspresi miR-21 berlebih berhubungan dengan stadium klinis KKR, yang merupakan faktor prognosis utama pada KKR. MicroRNA 195 (miR-195) memiliki *property* sebagai tumor supresor. Berkurangnya aktivitas miR-195 berhubungan dengan metastasis nodus limfatikus dan prognosis yang buruk pada karsinoma kolorektal.

Penelitian ini bertujuan untuk mengetahui perbandingan kadar CEA dengan level ekspresi MicroRNA 21 dan MicroRNA tumor supresor 195 pada stadium karsinoma kolorektal.

Metodologi Penelitian : Penelitian ini dilakukan dengan rancangan studi *cross sectional* pada 31 pasien karsinoma kolorektal di Bagian Bedah Digestif RSUP Dr. Sardjito, Yogyakarta selama periode 2014-2016 yang masih mempunyai sisa jaringan blok parafin di Laboratorium Patologi Anatomi FK UGM. Uji korelasi antara kadar CEA, level ekspresi MicroRNAs dan stadium karsinoma kolorektal dengan Pearson Product Moment test. Mean \pm *standard error* dari kadar CEA dan level ekspresi MicroRNAs digunakan untuk membandingkan ketepatannya dalam memprediksi stadium karsinoma kolorektal.

Hasil : Kadar CEA yang tinggi memiliki hubungan yang signifikan $P=0.037$ ($P<0.05$), dan $r=0.375$ dengan stadium kanker kolorektal sedangkan level ekspresi miR-21 juga berpengaruh secara signifikan P value 0.027 dan $r=0.398$. Level ekspresi miR-195 yang rendah memiliki hubungan yang signifikan dengan prognosis karsinoma kolorektal yang buruk dengan P value 0.002 dan $r=-0.533$. *Standart error of mean* pada kadar CEA terlalu besar pada setiap stadium. miR-21 lebih baik dibandingkan miR-195 untuk menentukan stadium I dan II sedangkan untuk menentukan stadium III dan IV miR-21 dan miR-195 sama-sama baik.

Kesimpulan : Terdapat hubungan yang signifikan antara kadar CEA dan level ekspresi mir-21 serta tumor supresor miR-195 terhadap stadium karsinoma kolorektal. Kadar CEA kurang baik dalam prediksi stadium karsinoma kolorektal dibandingkan miR-21 dan miR-195.

Kata kunci: Kadar CEA, ekspresi microRNA, karsinoma kolorektal, stadium

Abstract

The correlation and Comparison of the Levels of CEA with the Expression Levels of MicroRNA 21 and MicroRNA Tumor Suppressor 195 on the Stage of the Colorectal Cancer

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Introduction: Colorectal cancer (CRC) is included in the three most common causes of cancer deaths in the United States. Elevated CEA blood levels are associated with the progression of the disease of patients with colorectal cancer. High levels of CEA are a poor prognostic indicator. MicroRNA has been found as an oncogene factor and supporter of CRC progression. Over-expression of miR-21 is associated with the clinical stage of the CRC, which is a major prognostic factor in the CRC. MicroRNA 195 has a property as a cancer suppressor. Reduced activity of microRNA 195 is associated with the lymph nodes metastastasis and a poor prognosis of colorectal cancer.

This study aims to determine the correlation and comparative levels of CEA with the level of expression of the MicroRNA 21 and MicroRNA tumor suppressor 195 towards the stage of colorectal cancer.

Methodology : This study was conducted with a cross-sectional study design in 31 colorectal cancer patients during 2014 to 2016 at the Digestive Surgery Department of Dr. Sardjito Hospital., whose paraffin blocks were still kept in the Laboratory of Pathology Anatomy GMU faculty of medicine. To test the correlation between levels of CEA, the expression level of MicroRNA and stage of colorectal cancer the Pearson Product Moment test was used. The Mean standard error of the levels of CEA and expression level of MicroRNAs was used to compare the accuracy in predicting the stage of colorectal cancer.

Results : High CEA levels and expression level of miR-21 have a significant correlation with stage of colorectal cancer (p-value 0.037, p-value 0.027). Expression Level of miR-195 has a low significant correlation with the prognosis of colorectal cancer (p-value of 0.002). Mean Standard error on the levels of CEA is too large at each stage. miR-21 is better than miR-195 to determine the stage I and II whereas, to determine the stage III and IV miR-21 and miR-195 are equally good.

Conclusion : There is a significant correlation between levels of CEA and the expression level of mir-21 and tumor suppressor miR-195 to stage colorectal cancer. The lower the levels of CEA, the better is the prediction stage of colorectal cancer compared to miR-21 and miR-195.

Keywords: Levels of CEA, expression of the microRNA, colorectal cancer, stage