

INTISARI

Latar belakang: Karsinoma hepatoseluler (KHS) merupakan kanker terbanyak kelima dan urutan ketiga penyebab kematian di dunia. Prognosis dan keberhasilan terapi KHS tergantung pada deteksi dini penyakit. MiR-21 merupakan salah satu mikro RNA yang ekspresinya mengalami peningkatan pada KHS sehingga potensial dikembangkan sebagai biomarker deteksi dini KHS. Keterkaitan antara miR-21 dan TGFBR2 pada plasma penderita KHS belum pernah diteliti sebelumnya. Gangguan regulasi ekspresi TGFBR2 diketahui berkaitan dengan dengan kejadian kanker akibat hilangnya kemampuan dalam meregulasi *cell cycle arrest*.

Tujuan Penelitian: Penelitian ini bertujuan untuk mengetahui perbedaan ekspresi miR-21 dan mRNA TGFBR2 pada plasma pasien KHS dibandingkan dengan dengan plasma kontrol sehat serta korelasi keduanya.

Metode: MiR-21 dan mRNA TGFBR2 diisolasi dari sampel darah pasien KHS. Tahapan penelitian meliputi isolasi plasma, isolasi RNA (*miRCURY® RNA isolation Kit-Biofluid*) sintesis cDNA (*Universal cDNA synthesis kit II®, 8-64 rxns*) menggunakan mesin *thermal cycler* PCR (Biorad c 1000®) serta *running* qRT-PCR (Biorad CFX 96®). Sedangkan untuk mRNA TGFBR2 dilakukan *one-step qRT-PCR* (Bioline SYBR FAST®).

Hasil Penelitian: Hasil qRT PCR menunjukkan ekspresi miR-21 mengalami peningkatan pada plasma KHS sebesar 1,74 kali ($p = 0,126 > 0,05$) dan ekspresi mRNA TGFBR2 mengalami peningkatan pada plasma KHS sebesar 11,34 kali ($p < 0,001$). Keduanya menunjukkan adanya korelasi positif dengan kekuatan lemah ($p = 0,024$, $R = 0,266$). Ekspresi miR-21 menunjukkan adanya peningkatan ekspresi sebanyak 3,36 kali ($p = 0,019$) pada plasma KHS dengan HBV positif dan meningkat sebanyak 4,63 kali ($p = 0,017$) pada plasma KHS post TACE.

Kesimpulan: Ekspresi miR-21 dan mRNA TGFBR2 meningkat pada plasma pasien KHS serta terdapat korelasi antara kedua variabel tersebut.

Kata kunci: plasma, KHS, miR-21, mRNA TGFBR2

ABSTRACT

Background: Carcinoma hepatocellular (HCC) was the fifth most common cancer and the third causing death all over the world. Patient response to therapy and its prognosis depend on their early detection. Plasma microRNA was the potential candidate as early detection biomarker for HCC. MicroRNA-21 (miR-21) is known as an oncomir of which expression was up regulated in HCC. Correlation between miR-21 targeting TGFBR2 in plasma samples of HCC patient (in vivo) haven't reported yet before. TGFBR2 is a receptor in TGF beta signaling pathway where its deregulation related with some of cancer as its loss of cell cycle arrest capacity.

Objective: The aim of this current study was to examine whether expression of miR-21 was up regulated and whether TGFBR2 as a target of miR-21 was down regulated in HCC patient rather than healthy individual and also to understand the correlation between them.

Methods: MiR-21 dan mRNA TGFBR2 was isolated from HCC patient blood samples. Total RNA isolation for miR-21 was performed using miRCURY RNA isolation Kit-Biofluid, followed by cDNA synthesis for microRNA using Universal cDNA synthesis kit ll, 8-64 rxns and thermal cycler PCR (Biorad c 1000). While one-step qRT-PCR Bioline SYBR FAST® was used for mRNA TGFBR2 quantification. qRT-PCR for both were performed using Real-time qPCR (Biorad CFX 96).

Result: qRT PCR showed expression of miR-21 was up regulated in HCC plasma sample 1.74 fold ($p = 0,126 > 0,05$) and expression of mRNA TGFBR2 was also up regulated 11,34 fold compared to healthy individual ($p = 0,000 > 0,05$). Spearman correlation showed positive correlation between them ($p = 0,024 < 0,05$, $R = 0,266$). MiR-21 expression was 3,36 fold up regulated ($p < 0,019$) in HBV related HCC and 4,63 fold up regulated in post TACE patient.

Conclusion: MiR-21 and mRNA TGFBR2 expression were both up regulated in HCC plasma sample, and there were weak positive correlation between them.

Keyword: plasma, HCC, miR-21, mRNA TGFBR2