ABSTRAK

HUBUNGAN KADAR *TRANSFORMING GROWTH FACTOR BETA-1* (TGF-β1) DENGAN DERAJAT HISTOPATOLOGI (*GLEASON SCORE*) PADA PASIEN KARSINOMA PROSTAT DI RSUD PROF. DR. MARGONO SOEKARJO

(Studi Pendahuluan Sebagai Kandidat Pengembangan Biomarker Prognostik Non-Invasif Menggunakan Analisis Bioinformatika)

Nurul Robiah Aladawiyah

Kanker prostat (PCa) merupakan keganasan posisi ke-2 yang paling sering diderita oleh laki-laki di seluruh dunia dan ke-5 di Indonesia. Keterlambatan diagnosis sering terjadi disebabkan belum terdapat biomarker spesifik yang bersifat non-invasif dan dapat mendeteksi PCa sejak stadium awal. Ekspresi protein TGF-β1 yang berlebih dikaitkan dengan prognosis buruk pada pasien PCa. Namun, belum diketahui secara detail mengenai peran dan perubahan ekspresinya pada urin penderita PCa. Penelitian ini bertujuan untuk mengetahui hubungan antara kadar TGF-β1 dengan derajat histopatologi (*Gleason Score*) pada pasien PCa serta mekanisme regulasi protein TGF-β1 terhadap karsinogenesis kanker prostat. Penelitian dilakukan secara observasional analitik dengan studi *cross*-sectional menggunakan sampel urin dari 30 partisipan yang didapatkan dengan teknik *purposive sampling* untuk mendeteksi ekspresi protein TGF-β1 menggunakan ELISA. Analisis bioinformatika digunakan untuk mengetahui peran TGF-β1 terhadap karsinogenesis kanker prostat. Diketahui pasien adenokarsinoma prostat di RSUD. Prof. Dr. Margono Soekarjo berdasarkan derajat histopatologi (*Gleason Score)* didominasi oleh *high grade* sebanyak 14 orang (46,6%). Rerata kadar TGF-β1 tertinggi terdapat pada skor *Gleason low grade* dengan nilai 36.619 pg/mL. Data dianalisis dengan uji korelasi *Spearman* menggunakan aplikasi SPSS dengan hasil menunjukkan nilai signifikansi p=0,470 (p>0,05) artinya tidak terdapat hubungan yang signifikan antara peningkatan kadar TGF-β1 dengan derajat histopatologi (*Gleason score*). Analisis bioinformatika menunjukkan bahwa TGF-β1 berperan sebagai salah satu regulator utama kanker prostat dengan prognosis buruk. TGF-β1 terlibat dalam proses anti-apoptosis, diferensiasi, proliferasi, angiogenesis, dan metastasis sel kanker prostat sehingga TGF-β1 dapat berpotensi sebagai biomarker prognostik kanker prostat.

Kata Kunci: Analisis Bioinformatika, Biomarker Prognostik, *Gleason Score*, Karsinoma Prostat, Non-Invasif, TGF-β1

ABSTRACT

THE RELATIONSHIP OF TRANSFORMING GROWTH FACTOR BETA-1 (TGF-β1) LEVELS WITH HISTOPATHOLOGICAL GRADE (GLEASON SCORE) IN PROSTATE CARCINOMA PATIENTS AT REGIONAL PUBLIC HOSPITAL PROF. DR. MARGONO SOEKARJO

(***Preliminary Study as a Candidate for the Development of Non-Invasive Prognostic Biomarkers Using Bioinformatics Analysis***)

Nurul Robiah Aladawiyah

Prostate cancer (PCa) is the 2nd most common malignancy suffered by men throughout the world and 5th in Indonesia. Overexpression of TGF-β1 protein is associated with poor prognosis in PCa patients. However, details about its role and changes in expression in the urine of PCa sufferers are not yet known. This study aims to determine the relationship between TGF-β1 levels and Gleason Score in PCa patients as well as the regulatory mechanism of TGF-β1 protein on PCa carcinogenesis. The research was conducted as an analytical observational cross-sectional study using urine samples from 30 participants to detect TGF-β1 protein expression using ELISA. Bioinformatics analysis was used to determine the role of TGF-β1 in PCa carcinogenesis. It is known that the patient has prostate adenocarcinoma at the Regional General Hospital. Prof. Dr. Margono Soekarjo based on Gleason Score was dominated by high grade with 14 people (46.6%). The highest mean TGF-β1 level was found in the low grade Gleason score with a value of 36,619 pg/mL. Data were analyzed using the Spearman correlation test using the SPSS application with the results showing a significance value of p=0.470 (p>0.05), meaning that there was no significant relationship between increasing TGF-β1 levels and Gleason score. Bioinformatics analysis showed that TGF-β1 acts as one of the main regulators of PCa with poor prognosis. TGF-β1 is involved in the processes of anti-apoptosis, differentiation, proliferation, angiogenesis, and metastasis of PCa cells so that TGF-β1 can have potential as a prognostic biomarker for PCa

***Keywords**: Bioinformatics Analysis, Gleason Score, Non-Invasive, Prognostic Biomarkers, Prostate Carcinoma, TGF-β1*