



KORELASI KADAR TROMBOMODULIN SERUM DENGAN D-DIMER PADA TROMBOSIS VENA DALAM

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INTISARI

Latar belakang: Trombosis vena dalam (TVD) merupakan salah satu manifestasi klinis tromboemboli vena (TEV) dan memiliki *survival* yang rendah (terutama jika terjadi emboli paru), tingkat kekambuhan yang tinggi dan biaya kesehatan yang tinggi. Risiko TEV dapat diketahui melalui pemeriksaan parameter yang menggambarkan *hypercoagulable state*. D-Dimer menggambarkan proses fibrinolisis setelah terbentuknya trombus, sedangkan trombomodulin (TM) berperan lebih awal dalam mekanisme regulasi koagulasi yaitu menghambat aktivitas koagulasi melalui jalur protein C. Belum jelas diketahui apakah peningkatan TM selalu diikuti oleh penurunan D-Dimer atau sebaliknya. Di Indonesia belum pernah dilakukan penelitian mengenai korelasi kadar trombomodulin dan D-Dimer pada populasi TVD yang belum mendapatkan terapi antikoagulan.

Tujuan: Mengevaluasi korelasi antara TM dengan D-dimer pada pasien TVD.

Metode: Penelitian ini merupakan penelitian observasional analitik dengan desain potong lintang. Subjek adalah penderita TVD berdasarkan hasil pemeriksaan USG *Doppler* vaskuler di Departemen Kardiologi dan Kedokteran Vaskuler serta di Instalasi Radiologi Diagnostik RSUP Dr. Sardjito, Yogyakarta. Data disajikan dalam proporsi, rerata±simpang baku, median (min-maks). Analisis korelasi antara TM dengan D-Dimer menggunakan uji *Spearman*, dengan tingkat kemaknaan $p < 0,05$.

Hasil: Didapatkan total 45 pasien TVD, proporsi wanita lebih banyak dibandingkan pria (75,6% vs. 24,4%). Rerata usia pasien TVD 53,8±13,1 tahun. Subjek dengan indeks massa tubuh (IMT) normal merupakan persentase terbanyak menderita TVD (48,9%). Faktor risiko terbanyak adalah golongan darah non-O (71,1%), hipertensi (57,8%) dan kanker (53,3%). Median kadar TM didapatkan sebesar 0,34 (0,05-5,26) ng/mL dan D-Dimer 1127 (117-26240) ng/mL. Hasil uji korelasi antara trombomodulin serum dengan D-Dimer menunjukkan $r = -0,414$, $p = 0,005$. Tidak didapatkan perbedaan yang bermakna untuk kadar trombomodulin ataupun D-Dimer pada berbagai faktor risiko TVD.

Simpulan: Terdapat korelasi negatif sedang yang bermakna antara trombomodulin serum dan D-Dimer pada pasien trombosis vena dalam. Semakin rendah kadar TM, maka semakin tinggi kadar D-dimer, demikian sebaliknya.

Kata Kunci: faktor risiko, trombosis vena dalam, trombomodulin, d-dimer, *hypercoagulable state*



CORRELATION OF SERUM THROMBOMODULIN AND D-DIMER IN DEEP VEIN THROMBOSIS PATIENTS

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ABSTRACT

Background: Deep vein thrombosis (DVT) is one of the clinical manifestations of venous thromboembolism (VTE), and it has low survival, especially when pulmonary embolism followed by DVT, high recurrence rates and less costly manner. The risk of VTE can be identified by examination of hypercoagulable state's parameters. D-Dimer reflect the process of fibrinolysis after the formation of thrombus, whereas thrombomodulin (TM) plays earlier as regulatory mechanism system, by inhibiting coagulation activity through protein C pathways. Wether the increasing of TM always followed by a decrease in D-Dimer or conversely, is still unclear. There's no previous study in Indonesia about correlation between TM and DD in DVT patients.

Objective: To evaluate the correlation between TM and D-Dimer in DVT patients

Method: This was an observational analytical study with cross sectional design. Subjects were DVT patients based on the results of vascular Doppler ultrasound examination at Department of Cardiology and Vascular Medicine or at the Diagnostic Radiology Installation of Dr. Sardjito Hospital, Yogyakarta. Data were presented in proportion, mean±standard deviation, median (min-max). Correlation test between TM and D-Dimer were analyzed by Spearman test, with significance level $p < 0.05$.

Results: There were 45 DVT patients with the proportion of female were higher than male (75.6% vs. 24.4%). The average of age of DVT patients was 53.8 ± 13 y.o. Subjects with normal BMI were the highest percentage suffering of DVT (48.9%). The most risk factors for DVT were non-O blood group (71.1%), followed by hypertension (57.8%) and cancer (53.3%). The median of TM and D-Dimer were 0.34 (0.05-5.26) ng/mL and 1127 (117-26240) ng/mL respectively. A correlation between thrombomodulin and D-Dimer was detected ($r = -0.414$; $p = 0.005$). There was no significance differences based on risks factors of DVT, neither trombomodulin nor D-Dimer.

Conclusion: There was a significant negative moderate correlation between serum thrombomodulin and D-Dimer in deep vein thrombosis patients. The lower thrombomodulin level, the higher D-dimer level and conversely.

Keywords: risk factors, deep venous thrombosis, thrombomodulin, d-dimer, hypercoagulable state