

## INTISARI

### HUBUNGAN HIPERKOAGULABILITAS PEMERIKSAAN TROMBOELASTOGRAFI DENGAN TROMBOSIS AKSES VASKULAR PADA PASIEN PENYAKIT GINJAL TAHAP AKHIR YANG MENJALANI HEMODIALISIS

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**Latar Belakang:** Penurunan Laju Filtrasi Glomerulus (LFG) sampai kurang dari 30 mL/menit berkorelasi dengan peningkatan risiko hiperkoagulabilitas. Kondisi tersebut secara teori berperan dalam pembentukan trombosis akses vaskular, selain endotel pembuluh darah yang melibatkan partisipasi trombosit, sistem koagulasi, sistem antikoagulan dan sistem fibrinolitik, setiap komponen tersebut bisa dinilai menyeluruh dari pemeriksaan tromboelastografi (TEG).

**Tujuan Penelitian :** Penelitian ini bertujuan untuk mengetahui hubungan hiperkoagulabilitas pemeriksaan tromboelastografi dengan kejadian trombosis akses vaskular pada pasien penyakit ginjal tahap akhir yang menjalani hemodialisis.

**Metode Penelitian :** Penelitian metode analitik dengan pendekatan *prospective cross sectional* yang melibatkan pasien yang menjalani hemodialisis rutin di RSUP Dr. Sardjito. Hasil tromboelastografi dengan kondisi hiperkoagulabilitas kita nilai dengan *Coagulation Index* (CI) >3, yang didapatkan dari 5 komponen pemeriksaan yaitu nilai R, K, *Alpha Angle* ( $\alpha$ ), *Maximum Amplitude* (MA), dan LY30. Trombosis akses vaskular didapatkan dari hasil anamnesis berupa gejala keluhan utama nyeri dan gangguan akses vaskular selama hemodialisis, lalu dipastikan dengan pemeriksaan USG vaskular Doppler yang dilakukan oleh ahli sonografi berpengalaman di instalasi radiologi RSUP dr Sardjito. Dilakukan analisis data dengan nilai kemaknaan  $p < 0,05$  dan interval kepercayaan 95%.

**Hasil Penelitian:** Pasien yang terlibat dalam penelitian ini sebanyak 58 subyek, kondisi trombosis akses vaskular terjadi pada 12 (20,7%) pasien tetapi tidak ada satupun yang mengalami hiperkoagulabilitas. Kondisi hiperkoagulabilitas pada penelitian ini terjadi pada 11 (19,0%) pasien dan tidak diikuti juga kejadian trombosis akses vaskular, sehingga tidak terbukti pada penelitian ini bahwa hiperkoagulabilitas dari pemeriksaan tromboelastografi mempengaruhi kejadian trombosis akses vaskular. Faktor perancu yang diteliti yaitu kondisi diabetes mellitus, hipoalbumin, dan LDL >100 mg/dL juga tidak terbukti bermakna mempengaruhi kejadian trombosis akses vaskular.

**Simpulan:** Kondisi hiperkoagulabilitas melalui pemeriksaan tromboelastografi tidak terbukti memiliki hubungan bermakna dengan kejadian trombosis akses vaskular.

**Kata kunci:** Hiperkoagulabilitas, tromboelastografi, trombosis, akses vaskular

## ABSTRACT

### THE RELATIONSHIP BETWEEN THROMBOELASTOGRAPHY HYPERCOAGULABILITY AND VASCULAR ACCESS THROMBOSIS IN END STAGE KIDNEY DISEASE PATIENTS UNDERGOING HEMODIALYSIS

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**Background:** Decrease in the Glomerular Filtration Rate (GFR) to less than 30 mL/minute correlates with an increased risk of hypercoagulability. These conditions theoretically play a role in the formation of vascular access thrombosis, in addition to the vascular endothelium which involves the participation of platelets, coagulation system, anticoagulant, and fibrinolytic, each of these components can be assessed thoroughly from a thromboelastography (TEG) examination.

**Aim :** This study aims to determine the relationship between hypercoagulability by thromboelastography examination and the incidence of vascular access thrombosis in patients with end-stage renal disease undergoing hemodialysis.

**Method :** This analytical method study used a prospective cross-sectional approach involving patients undergoing routine hemodialysis at Dr. Sardjito General Hospital. The results of thromboelastography with hypercoagulability conditions were assessed by Coagulation Index (CI) > 3, which was obtained from the 5 components of the examination, namely the values of R, K, Alpha Angle ( $\alpha$ ), Maximum Amplitude (MA), and LY30. Vascular access thrombosis was obtained from the results of anamnesis by symptoms of the main complaint of pain and impaired vascular access during hemodialysis, then confirmed by Doppler vascular ultrasound examination performed by an experienced sonographer at the radiology of Dr. Sardjito General Hospital. Data analysis was performed with a significance value of  $p < 0,05$  and a 95% confidence interval.

**Result :** There were 58 patients included in this study, 12 (20,7%) patients had vascular access thrombosis but none had hypercoagulability state. Hypercoagulability state in this study occurred in 11 (19,0%) patients and were not followed by vascular access thrombosis events, so it was not proven in this study that hypercoagulability from thromboelastography examination affected vascular access thrombosis events. The confounding factors studied were diabetes mellitus, hypoalbumin, and LDL >100 mg/dL which were also not proven to significantly affect the incidence of vascular access thrombosis.

**Conclusion :** The condition of hypercoagulability through thromboelastography was not proven to have a significant relationship with the incidence of vascular access thrombosis.

**Keywords :** Hypercoagulability, thromboelastography, thrombosis, vascular access