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Abstracts

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12AP02-8
Correlation between fibrinogen and D-dimer levels with low-frequency piezoelectric thromboelastography (LPTEG) data in patients with confirmed prostate cancer.

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Background and Goal of Study: Prostate cancer is one of the most common malignant tumors in men, it ratio increases greatly after age of 65. Studies had proved that patients with prostate cancer have significantly higher D-dimer level with normal fibrinogen data(1). The aim of this study is to establish correlation between fibrinogen and D-dimer levels and LPTEG data in preoperative settings.
Materials and Methods: Participants were ≥70 y.o., underwent transrectal ultrasound guided prostate biopsy from October 2017 till October 2018. Plasma prostate specific antigen (PSA), D-dimer, fibrinogen levels and LPTEG data were collected before the procedures. The patients (n=79) were divided into two groups according to the tests results. Group A (n=49) was represented by the patients with benign prostate hyperplasia; group B (n=30) was represented by the patients with clinical, histological and laboratory confirmed prostate cancer.
Results and Discussion: In group A fibrinogen and D-dimer levels were 305.49 ± 71.03 mg/dl and 0.39 ± 0.19 μg/ml; in group B fibrinogen and D-dimer levels were 321.02 ± 58.32 mg/dl and 2.01 ± 1.54 μg/ml. As shown, plasma D-dimer level was higher in patients with prostate cancer. Blood coagulation constants checked by LPTEG were: Intensity of contact coagulation (ICC), Intensity of coagulation drive (ICD), clot maximum density (MA) and fibrinolytic activity - Index of retraction and clot lysis (IRCL). We received slight increase of all measurements in group A: ICC by 13.13 ± 8.56%, ICD by 22.43 ± 10.93%, MA by 44.11 ± 19.31%, IRCL by 61.18 ± 31.18% above the norm; in group B - moderate increase in all the measurements: ICC by 25.32 ± 10.26%, ICD by 42.11 ± 19.14%, MA by 78.39 ± 24.53%, IRCL by 98.56 ± 46.21% above the norm. After statistical analysis we received strong overall correlation (r = 0.9894, rho= 0.996) between fibrinogen and D-dimer levels with corresponding LPTEG data (p <0.00001).
Conclusions: The present study demonstrated that LPTEG have high utility for preoperative coagulation disorders evaluation in patients with prostate cancer and correlates with fibrinogen and D-dimer levels in corresponding points. Further studies are needed to establish correlation of LPTEG data in perioperative settings.
References:
1. Çalışkan S, Sungur M. Fibrinogen and D-dimer levels in prostate cancer: Preliminary results. Prostate Int. 2017 Sep;5(3):110–2.

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12AP02-9
"Risk factors of transfusion in femur fracture. Prospective observational study"

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Background & Goals: Femur fracture in the elderly population is a prevalent pathology with a high morbidity and mortality. According to our reports transfusion is related to higher mortality 30 days after surgery and during the first year. The aim of this study is to describe the evolution of hemoglobin and perioperative transfusion needs and to identify transfusion risk factors.
Material & Method: A prospective unicentric observational study including consecutive patients over the age of 65 with the diagnosis of femur fracture and indication of surgical treatment was carried out. The study was approved by the local Ethics Committee and informed consent was requested from the participants. The main variables analyzed were: demographic and anthropometric data, type of fracture (intra VS extra-articular), haemoglobin evolution until 4th postoperative day estimated bleeding, use of tranexamic acid, chronic treatment with anticoagulants and antiplatelet agents and delay of the surgery (hours).
Results: Eighty-eight patients were included in the study. Were predominantly women (77.27%) 78 years old on average, mean BMI 26.28, , mean haemoglobin on admission 12.08 gr/dL and preoperative 11.17 g / dl, mean bleeding 1568ml and mean dalay of surgery 43. 21% were on chronic treatment with oral anticoagulants, and 10% clopidogrel. Preoperative tranexamic was administered in 39%. Of the total fractures, 53.41% were extracapsular VS 46.59% intracapsulard. The total percentage of transfusions was 44.32%.

Variable	*Univariable analysis*			*Multivariable analysis*		
	Odds ratio	95% CI	P-value	Odds ratio	95% CI	P-value
IMC	1.0311	[0.9402-1.1308]	0.514			0.716
Bleeding	1.0006	[1.0001-]	<0.01	1.0008	[1.0002-1.0015]	0.007
Hb						
Admission	0.503	[0.349-0.726]	<0.01	0.9644	[0.5099-1.8240]	0.091
Preoperative	0.3048	[0.1832-0.5072]	<0.01	0.2574	[0.1138-0.5824]	0.001
Type of fracture	0.375	[0.156-0.898]	0.028			
Intra-articular				1.3976	[0.305-6.4982]	0.669
Extra-articular				1		
Tranexamic	0.7466	[0.3143-1.7732]	0.508	0.4672	[0.1000-2.1825]	0.333
Anticoagulants			<0.01	3.9399	[0.6164-25.1821]	0.147
Antiplatelet agents			0.994	0.5164	[0.0527-5.0572]	0.570
Delay of surgery	1.021	[1.005-1.037]	<0.01	1.0118	[324.96-7.55e+08]	0.383

Conclusion: Our effort has to be oriented to reduce and prevent anaemia: early therapy with iv iron and tranexamic acid during surgery. More studies are needed in order to validate other therapies such as recombinant erythropoietin or tranexamic acid on admission. Multivariable analysis does not prove statistical relation between delay time in surgery treatment and transfusion. Despite that, it has to be taken in consideration because of the implications in morbi-mortality described in other studies.

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12AP02-10
Validation of hemostatic impairment induced by hydroxyethyl starch (HES) in vivo

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Background and Goal of Study: Past studies suggest that HES may inhibit blood coagulation. However, resolution by α-amylase or the possibility of ´effective´ dilution was not considered at the same time. We hypothesized that HES has a coagulation inhibitory effect exceeding dilution effect *in vivo* by adherance to the vascular endothelium and damage to glycocalyx.
Materials and Methods: We performed hemodilution in 3 groups of 16 rats by physiological saline (PS), 6%HES130 in PS and 10%HES200 in PS with continuous monitoring of blood pressure, avoiding shock. Three blood samples were collected from each rat when the hematocrit was 26-30%. Activated clotting time (ACT), clot rate (CR), and value of platelet function (PF) were recorded. The amount of factor X, heparan sulfate proteoglycan (HSPG), syndecan 1 (SDC1), thrombomodulin (TM) from plasma and GPIIb/IIIa from homogenized platelet cells were assayed by ELISA. We also investigated the endothelial effect when the fluorescein isothiocyanate (FITC)-HES130 and the FITC-HES200 were infused in the isolated aorta. Statistical analysis was performed using the Kruskal-Wallis H-test followed by the Newman-Keuls-type test for multiple comparisons. P values < 0.05 were considered statistically significant.
Results and Discussion: CR was significantly reduced by the larger molecular weight HES despite equal dilution (Fig. 1A). PF was relatively high in the HES groups (Fig. 1A). Factor X was reduced by HES200 (Fig. 1B), but there was no significant difference in GPIIb/IIIa and HSPG (Fig. 1B) . SDC1 and TM were low in the HES200 (Fig. 1B). HES molecules (Fig. 2). HES adhered to the endothelium (Fig. 2).
Conclusions: Larger molecular weight HES can impair coagulation exceeding the dilution effect, but it can promote platelet function. HES adheres to the endothelium but protcets glycocalyx rather than sheds.

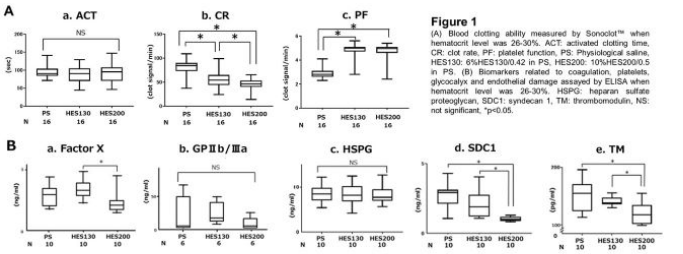

Figure 1
(A) Blood clotting ability measured by Sonoclot™ when hematocrit level was 26-30%. ACT: activated clotting time, CR: clot rate, PF: platelet function, PS: Physiological saline, HES130: 6%HES130/0.42 in PS, HES200: 10%HES200/0.5 in PS. (B) Biomarkers related to coagulation, platelets, glycocalyx and endothelial damage assayed by ELISA when hematocrit level was 26-30%. HSPG: heparan sulfate proteoglycan, SDC1: syndecan 1, TM: thrombomodulin, NS: not significant, *p<0.05.

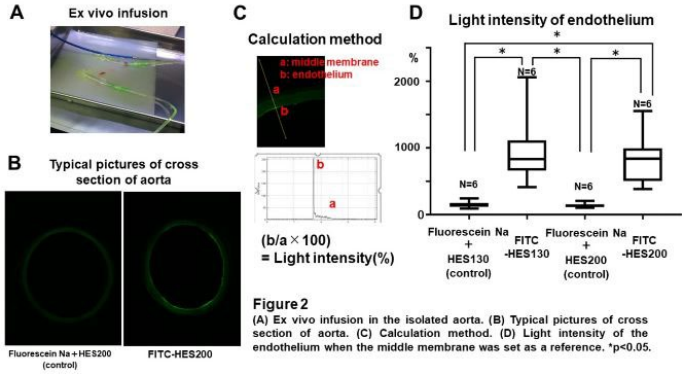

Figure 2
(A) Ex vivo infusion in the isolated aorta. (B) Typical pictures of cross section of aorta. (C) Calculation method. (D) Light intensity of the endothelium when the middle membrane was set as a reference. *p<0.05.