**Supplementary Table 1. Studies investigating coagulation in both venous and arterial blood obtained from humans (number of studies, n=29)**

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| --- | --- | --- | --- | --- |
| **Author (year)** | **Study population** | **Sampling sites (needle size)****Sampling time** | **Laboratory analyses** | **Results** |
| Naimi et al. (1963) [1] | Atherosclerosis, n=68Mean age: 56 yMale: 42 (62%)Healthy, n=28 Mean age: 27 y Fibrinolysis in all, coagulation in 20 patients and 16 healthy | Brachial artery (19G)Antecubital vein (19G)Time: 9-9.30 AM (after fasting) | PT, FII, FV, FVII/X, thromboplastin generation, heparin tolerance, Stypven time, platelet count, fibrinogen, fibrinolysis (euglobulin precipitation) | Healthy: PT: A $\uparrow $Heparin tolerance test: A $\uparrow $Thromboplastin generation: A $\downright $Fibrinolysis: A $\uparrow $FII, FV, FVII/X, Stypven time, platelet count, fibrinogen: 🡪 Similar results, though less pronounced, in the atherosclerotic group |
| Chakrabarti et al (1963) [2] | Volunteers, n=11,Hereof atherosclerotic, n=7  | Brachial arteryAntecubital vein | Fibrinolytic activity (dilute clot lysis time) | Fibrinolytic activity: 🡪 |
| Ozsoylu et al. (1969) [3] | Cardiac surgery for septal defects, n=4Healthy, n=14 | Brachial artery Antecubital vein Time: Before heparin | PT, PTT, FII, FV, FVII/X, FXIII, FVIII, fibrinogen, platelet count | FVIII: A $\uparrow $ Fibrinogen: A $\uparrow $PT, PTT, FII, FV, FVII/X, FXIII, platelet count: 🡪 |
| Saveleva et al. (1976) [4] | Coronary atherosclerosis or rheumatic heart disease, n=179Healthy, n=50  | Brachial artery Antecubital vein Time: Morning (after fasting) | Blood coagulation time, re-calcification time, heparin tolerance, prothrombin utilization, prothrombin index, fibrinogen, fibrinogen B, fibrinase activity, PT, free heparin, euglobinolysis time, natural lysis, clot retraction and density, platelet adhedsivity, platelet count, plasmin, plasminogen activator, plasminogen proactivator, plasminogen, antiplasmins  | Healthy:Coagulation time: A $\uparrow $Re-calcification time: A $\uparrow $Heparin tolerance: A $\downright $Euglobinolysis: A $\uparrow $Plasminogen activator: A $\downright $Prothrombin utilization and index, fibrinogen, fibrinogen B, fibrinase activity, PT, free heparin, euglobinolysis time, natural lysis, clot retraction and density, platelet adhedsivity, platelet count, plasmin, plasminogen proactivator, plasminogen, antiplasmins: 🡪Similar results, though less pronounced, in the heart disease group |
| Haines et al. (1979) [5] | Ischemic heart disease undergoing catheterization, n=31 | Femoral arteryPulmonal arteryFemoral vein (n=10)Time: Before heparin | FII, FV, FVII, FVIII, FX, fibrinogen, AT, fibrinolytic activity (dilute clot lysis time) | FII, FV, FVII, FVIII, FX, fibrinogen, AT, fibrinolytic activity: 🡪  |
| Aviram et al. (1987) [6] | Healthy males, n=10 | Radial artery Antecubital vein (20G)Time: 8AM (after fasting) | Platelet aggregation (agonist collagen). Serotonin release, beta-TG | Platelet aggregation: A $\uparrow $Serotonin release: A $\uparrow $Beta-TG: A $\uparrow $ |
| Haynes et al. (1992) [7] | Patients in ICU, n=39Hereof n=9 having received heparin treatmentWith and without coagulopathy or AC treatment | Indwelling A cannula (20G, flushed with heparin 2u/mL 3-5mL/hour) Venepuncture in another limbA and V discard: 5.6 mL | APTT, PT, TT, fibrinogen, heparin | APTT: A $\uparrow $ (due to heparin flush)TT: A $\uparrow $ (due to heparin flush)PT, fibrinogen: 🡪Heparin in 50% A samples: APTT: A $\uparrow $ TT: A $\uparrow $9 heparin-treated patients: no V-A differences in APTT |
| Mundal et al. (1993) [8] | Fertile normotensive females, n= 19 Fertile hypertensive females, n=18Mean age: 40 y | Radial artery (venflon 1.2 mm) Cubital vein (venflon 1.4 mm) A and V discard: 2 mLTime: Baseline and after cold pressor test | Beta-TG, platelet count | Baseline normotensive+ hypertensiveBeta-TG: A $\downright $Platelet count: 🡪 |
| Blann et al. (1996) [9] | Diagnostic angiography, n=22 | Iliac arteryAntecubital veinTime: Immediately after insertion of angiographic catheter | PT, APTT, fibrinogen, vWF, tPA, tPA/PAI, soluble selectin, D-dimer | tPA/PAI: A $\uparrow $PT, APTT, fibrinogen, vWF, tPA, soluble selectin, D-dimer: 🡪 |
| Heap et al. (1997) [10] | ICU-patients, n=79Age >18 y, no heparin 24 h before | An indwelling line (flushed with 1IU/mL heparin 3-4 mL/hour)VenepunctureA discard: Sample 1: 4.5 mL Sample 2: 16 mL  | APPT, PT, fibrinogen, reptilase time, TTIf A APTT >10% prolonged -> anti-Xa assay | 1. A sample:APTT: A $\uparrow $ (due to heparin flush)TT: A $\uparrow $(due to heparin flush)2. A sample: APTT: A $\uparrow $ (due to heparin flush)TT: A $\uparrow $ (due to heparin flush)PT, fibrinogen, reptilase time: 🡪 |
| Rubens et al. (1998) [11] | Cardiac surgery, n=8No major systemic illness, AP antifibrinolytic or AC treatment, re-operative surgery, pre-op coagulation/ platelet abnormality | Radial artery (2G)Peripheral vein (14G) CVCA and CVC discard: 10 mLPeripheral V discard: 2 mL Time: Before anaesthesia | Platelet flow cytometry: GPIb, GMP-140, thrombospondin, GPIIb/IIIa, FXIIIa | FXIIIa: A $\uparrow $GPIb, GMP-140, thrombospondin, GPIIb/IIIa: 🡪Individually $\uparrow $ activity in A blood |
| Li-Saw-Hee et al. (1999) [12] | Percutaneous balloon mitral valvuloplasty, n=25Mean age: 60 y Males: 5Warfarin treatment (INR 2-3) paused 2 days beforeINR 1.7 +/- 0.2  | Femoral artery Femoral veinTime: Before heparin  | D-dimer, fibrinogen, soluble selectin, beta-TG, soluble thrombomodulin, vWF | D-dimer, fibrinogen, soluble selectin, beta-TG, soluble thrombomodulin, vWF: 🡪 |
| Woller et al. (1999) [13] | Peripheral arterial occlusive disease, n=22Mean age: 63.1 yMales: 16 (73%) | Femoral artery from affected legV. intermedia cubiti venepuncture | F1+2, D-dimer, TAT | TAT: A $\uparrow $ F1+2: A $\uparrow $ D-dimer: 🡪 |
| Peverill et al. (2000) [14] | Percutaneous balloon mitral valvuloplasty, n=36Normal INR, n= 29 Prolonged INR, n=7 | A and V samplingTime: Baseline | F1+2 | F1+F2: 🡪 |
| Manspeizer et al. (2001) [15] | Cardiac surgery, n=39Mean age: 68 yMales: 76%  | Intra-arterial catheter Internal jugular vein SI. Both flushed with 0.9% sodium chlorideA and V discard: 10 mLTime: Before and after anaesthesia, after heparin, after 60 min of CPB, at the end of CPB, after protamine, end of surgery, and 1. postop day (total paired samples, n=105) | TEG: R, MA, α-angle*,* K, LY30 | TEG: R: A $\downright $α-angle:A $\uparrow $MA: A $\uparrow $K: A $\downright $LY30: 🡪Abnormal values MA>45 mm: V 38% - A 20% \*R>20 mm: V 9% - A 1% \* |
| McLaren et al. (2001) [16] | Haemodialysis n=33Age range: 18-85 yMales: 15 | A bloodline in haemodialysis circuit, catheters flushed with 20.000 U heparin (n=2, 10.000 U)Peripheral venepuncture CVCA discard: 25 mLCVC discard: 5 mLTime: 15 min after start of haemodialysis before heparin  | INR | INR: 🡪Correlation coefficient Peripheral venous – CVC: R2=0.97 \*Peripheral venous – arterial: R2=0.99 \* |
| Frumento et al. (2002) [17] | Cardiac surgery, n=39Mean age: 66 yNo preop INR>1.2 | Radial artery (20G)CVPV: SIFlushed with 0.9% sodium chlorideDiscard: 10 mLTime: After anaesthesia, after protamine, end of surgery | TEG: R, MA, α-angle*,* K, LY30 | R: A $\downright $α-angle:A $\uparrow $MA: A $\uparrow $K: A $\downright $LY30: 🡪CVP: R $\downright $ and MA $\uparrow $ more than A blood |
| Murshid et al. (2002) [18] | Head injury (ICU), n=17Mean age: 26 yMales: 15(n=9 with other injuries). | Line in radial artery Peripheral venepuncture Line in internal jugular veinTime: At admission + every 24 h up to four days post-injury | PT, APTT, TCT, fibrinogen, F1+2, TAT, D-dimer, FVII, AT, protein S and protein C | Mean +/- sd. V - A, no p-valuesPT (s): 24.3 +/- 3.9 vs 23.5 +/- 4.4PT (%): 147.7 +/- 23.3 vs 144.3 +/- 26.1APTT (%): 110.1 +/- 21.3 vs 106.7 +/- 16.7TT (%): 104 +/- 16 vs. 105 +/- 16.9Fibrinogen (g/dl): 2.51 +/- 1.22 vs 2.31 +/- 0.90TAT (ng/ml): 60.5 +/- 31.3 vs 54.8 +/- 28.4Jugular vein 104.8 +/- 110.5F1+2 (mol/ml): 8.5 +/-3.7 vs 8.5 +/-4Jugular vein 11.6 +/- 3.8D-dimer (µg/ml): 1115 +/- 840.7 vs 1288 +/-1029Protein S (%): 56.8 +/- 21.3 vs 56.4 +/- 16.3Protein C (%): 86.6 +/- 20.8 vs 85.9 +/- 26AT (%): 93.1 +/- 21.8 vs 89.7 +/- 18.4FVII (%): 71.4 +/- 20 vs 74 +/- 24.3 |
| Hering et al. (2003) [19] | Peripheral arterial occlusive disease, n=11 Healthy, n=2 | Femoral artery and femoral vein from affected legAntecubital vein  | F1+2, TAT | TAT, F1+2: 🡪 |
| Chen et al. (2003) [20] | Percutaneous transluminal mitral valvuloplasty, n=16Mean age: 56.5Males: 2 (12.5%) | Femoral artery and femoral vein (introducer sheaths)A and V discard: 3 mLTime: fasting, before anaesthesia | Flow cytometry: selectin expression | Selectin expression: 🡪 |
| Durila et al. (2010) [21] | Severe sepsis, n=44Mean age: 62 y | Radial artery catheter CVC Both flushed with 4 IU/mL heparin, 3mL/hA and V discard: 10 mL  | INR, APTT, fibrinogen, platelet count, D-dimer, AT, TEG: R, K, α-angle, MA, Ly30 and LY60 | D-dimer: A $\downright $ AT: A $\uparrow $INR, APTT, fibrinogen, platelet count, TEG: R, K, α-angle, MA, Ly30 and LY60: 🡪 |
| Kafian et al. (2011) [22] | Coronary angiography, n=28Hereof n=23 PCIMales: 25 (89%)Aspirin and clopidogrel treatment | Femoral or radial artery (A sheath)Antecubital vein (21G)  | Platelet aggregation (agonists: ADP, ASPI) | Bland-Altman – mean bias (LLA; ULA): ADP: 45 (-102; 192) ASPI: 18 (-68; 105)Low-responders clopidogrel and aspirin: Identical patients identified |
| Rondina et al. (2012) [23] | ICU-patients, n=116Mean age: 51.4 y Males: 41.4%Average 2.3 sample/patient – A 66.9% | Sampling site was noted (A catheter, CVC, peripheral venepuncture)Catheters flushed with salineA + CVC discard: 3 mLTime: 24 h after admission + every 48 h +/-24 h | Platelet flow cytometry (unstimulated and TRAP activated): PAC-1 binding, selectin expression, PMA | PMA: A $\uparrow $GPIIb/IIIa, selectin expression: 🡪PMA correlates to total platelet count. |
| Oswald et al. (2013) [24] | Elective orthopaedic surgery, n=50Median age: 64 yNo known coagulopathy No treatment with AP or AC for 7 days  | Arterial line (20G)CVC (16G) Both flushed with sodium chlorideA and V discard: 5 mLTime: T0, intraop after 30ml/kg crystalloid/colloid fluids (T1), end of surgery (T2) (total 150 paired measurements) | ROTEM (INTEM, EXTEM og FIBTEM): CT, CFT, α-angle, A30, LI30Platelet aggregation (agonists ASPI, ADP, TRAP) | ROTEM:T0 INTEM, CT: A $\uparrow $T0 EXTEM CT: A $\downright $ T1 INTEM A30: A $\downright $ T1 EXTEM A30: A $\downright $ T2 EXTEM A30: A $\downright $ Platelet aggregation:T0 ASPI: A $\downright $ T1 TRAP: A $\uparrow $T2 ADP: A $\uparrow $Remaining parameters + time points: 🡪T0 correlation coefficients ROTEM: 0.519 (INTEM CT) – 0.977 (INTEM A30)Platelet aggregation: 0.798-0.950 |
| Karlsson et al. (2013) [25] | Coronary artery bypass grafting, n=20Mean age: 70 yMales: 14 (70%)No known coagulopathy | Radial arteryAntecubital veinCVCTime: preop after anaesthesia and tranexamic acid administration | Platelet aggregation (agonists ADP, TRAP) | Platelet aggregation: 🡪 |
| Shah et al. (2013) [26] | Coronary angiography, n=70Median age: 65 yMales 99% | Radial or femoral artery (sheath)Antecubital vein (21 G)A and V discard: 2 mL | Platelet count, mean platelet volume, immature platelet fraction, soluble selectin, flow cytometry: monocyte-platelet aggregates, leukocyte-platelet aggregates | All parameters: A $\downright $ |
| Tuovila et al. (2017) [27] | Different surgical procedures, n=51 Mean age: 65 y Males: 25 (49%)No AC or AP treatment  | Radial artery (cannula) Antebrachial veinDiscard: 2.7 mL  | TEG: R, MA | Mean of the difference (V-A) +/- sd, no p-valuesR: -0.4391 +/- 2.0MA: 0.3457 +/- 4.6 |
| Groves et al. (2019) [28] | Cardiac surgery with CPB, n=30 | Arterial catheter (20 G)CVC No heparin in cathetersA + V discard: 10 mLTime: After anaesthesia, during CPB/after protamine | Viscoelastic testing: CT, CTH, CTR, CS | CT: A $\uparrow $ (14.2%)CTH: A $\uparrow $ (11.9%)Correlation CT r=0.85, CTH r=0.72CTR, CS: 🡪 |
| Törnudd et al. (2022) [29] | Cardiac surgery with CPB, n=10, hereof n=9 treated with acetylsalicylic acidMean age: 70 yMales: 9 (90%)No AC or ADP-inhibitor treatment for 5 days | Radial artery (cannula, 20 G)Antebrachial or hand vein (16 or 17 G)Time: Prior to anaesthesia  | Platelet flow cytometry (total of 37 activators): PAC-1 binding, selectin, lysosomal associated membrane protein-1, annexin, 1,1ʹ,3,3,3ʹ,3ʹ-hexamethylindodicarbo-cyanine iodide, platelet-monocyte/lymphocytes/neutrophils aggregates Platelet aggregation (agonists ASPI, ADP, TRAP, collagen) | Platelet flow cytometry: Annexin: A$ \downright $ PAC-1 (some activators): A$ \uparrow $ Platelet-monocyte aggregates: A $\uparrow $Platelet-neutrophils aggregates: A $\uparrow $Remaining 27 parameters: 🡪Platelet aggregation: 🡪 |

Abbreviations: a, activated; A, arterial; A30, amplitude after 30 min; AC, anticoagulant treatment; ACT, activated clotting time; ADP, adenosine diphosphate; AP, antiplatelet treatment; APTT, activated partial thromboplastin time; ASPI, aspirin (arachidonic acid); AT, antithrombin; AUC, area under curve; beta-TG, beta-thromboglobulin; CFT, clot formation time; CPB, cardiopulmonary bypass; CS, clot stiffness; CT, clotting time; CTH, heparinase clotting time; CTR, clot time ratio; CVC, central venous catheter; CVP, central port of pulmonary artery catheter; F1+2, prothrombin fragment 1 and 2; F, coagulation factor ; GMP-140, selectin expression; GP, glycoprotein; ICU, intensive care unit; INR, international normalized ratio; intraop, intraoperative(ly); LI30, lysis index after 30 min; LLA, lower limit of agreement; MA, maximum amplitude; PAD, Peripheral arterial occlusive disease; PMA, platelet-monocyte-aggregate; postop, postoperative(ly); preop, preoperative(ly); PT, prothrombin time; PTCA, percutaneous transluminal coronary angioplasty; PTT, partial thromboplastin time; R, reaction time; ROTEM, rotational thromboelastometry; SI, side port of introducer sheath; TAT, thrombin-antithrombin-complex; TCT, thrombin clotting time; TEG, thromboelastography; tPA, tissue plasminogen activator; tPA/PAI, tPA/plasminogen activator inhibitor 1-complex; TRAP, thrombin-receptor activating peptide-6; TT, thrombin time; ULA, upper limit of agreement; V, venous; vWF, von Willebrand factor; y, years.

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