Clinical trials of LMWH

TrialResults-center www.trialresultscenter.org

1 acute coronary syndrome

Trial	Treatments	Patients	Trials design and methods
LMWH vs placebo (on top of aspirin)			
Gurfinkel (LMWH+asp vs asp) , 1995 n=68/73 follow-up: 5-7 days	aspirin plus low molecular weight heparin (214 UIC/kg anti-Xa twice daily subcutaneously versus aspirin (200 mg/day	patients with unstable angina	Parallel groups single blind
LMWH vs UFH (on top of aspirin)			
Gurfinkel (LMWH+asp vs UFH+asp) , 1995 n=68/70 follow-up: 5-7 days	aspirin plus low molecular weight heparin (214 UIC/kg anti-Xa twice daily subcutaneously versus aspirin plus regular heparin (400 IU/kg body weight per day intravenously and titered by activated partial thromboplastin time	patients with unstable angina	Parallel groups single blind

More details and results :

- antithrombotics for acute coronary syndrome in all type of patients at http://www.trialresultscenter.org/go-Q24
- heparin (UFH or LMWH) for acute coronary syndrome in all type of patients at http://www.trialresultscenter.org/go-Q171

References

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Gurfinkel (LMWH+asp vs UFH+asp), 1995:

Gurfinkel EP, Manos EJ, Mejal RI, Cerd MA, Duronto EA, Garca CN, Daroca AM, Mautner B Low molecular weight heparin versus regular heparin or aspirin in the treatment of unstable angina and silent ischemia. J Am Coll Cardiol 1995 Aug;26:313-8 [7608429]

2 DVT prophylaxis

Trial	Treatments	Patients	Trials design and methods
IPC + GCS +LMWH vs GCS +LMWH			
Dickinson , 1998 n=23/21 follow-up: 1 month	sequential compression device +enoxaparin (+ GCS) versus enoxaparin (+GCS)	neurosurgery, patients with brain tumors	open
GCS + LMWH vs LMWH			
Kalodiki (GCS+LMWH vs LMWH) , 1996 n=NA follow-up:	enoxaparin (40 mg once daily) plus graduated elastic compression (TEDR stockings) for 8-12 days versus low molecular weight heparin: (enoxaparin 40 mg once daily)	patients having elective total hip replacement	Parallel groups
LMWH vs UFH			
Harenberg , 1990 n=NA follow-up: 10 days	1 x 1.500 aPTT units of a LMW heparin fraction versus 3 x 5.000 IU of an unfractionated heparin	patients aged 40-80 years	Parallel groups double-blind
Harenberg , 1996 n=NA follow-up: 10 days	1 daily subcutaneous administration of LMW heparin for 10 days versus 3 x 5,000 IU unfractionated (UF) heparin for 10 days	medical inpatients	Parallel groups double-blind

More details and results :

- antithrombotics for DVT prophylaxis in medical patients at http://www.trialresultscenter.org/go-Q87
- graduated compression stockings for DVT prophylaxis in all type of patients at http://www.trialresultscenter.org/go-Q158
- mechanical devices for thromboprophylaxis for DVT prophylaxis in all type of patients at http://www.trialresultscenter.org/go-Q402
- mechanical devices for thromboprophylaxis for DVT prophylaxis in orthopaedic surgery at http://www.trialresultscenter.org/go-Q465

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Kalodiki (GCS+LMWH vs LMWH), 1996:

Kalodiki EP, Hoppensteadt DA, Nicolaides AN, Fareed J, Gill K, Regan F, al-Kutoubi A, Cunningham DA, Birch R, Harris N, Hunt D, Johnson J, Marx C Deep venous thrombosis prophylaxis with low molecular weight heparin and elastic compression in patients having total hip replacement. A randomised controlled trial. Int Angiol 1996;15:162-8 [8803642]

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3 venous thrombosis

Trial	Treatments	Patients	Trials design and methods
apixaban (without LMWH) vs LMWH/VKA			
AMPLIFY , 2013 [NCT00643201] n=2691/2704 follow-up: 6 mo	apixaban 10 mg twice daily for 7 days then 5 mg, twice daily, 6 months versus conventional therapy: enoxaparin 1mg/kg twice daily until INR>=2 then warfarin for an INR between 2-4, once daikly, 6 months	patients with deep vein thrombosis or pulmonary embolism	Parallel groups double blind
Botticelli DVT , 2008 [NCT00252005] n=358/118 follow-up:	apixaban 5 mg twice-daily, 10 mg twice-daily, or 20 mg once-daily for 84-91 days versus low molecular weight heparin followed by vitamin K antagonists	patients with symptomatic deep vein thrombosis	Parallel groups open
rivaroxaban (without LMWH) vs LMWH/VKA			
Einstein-DVT Dose-Ranging Study , 2008 n=NA follow-up:	rivaroxaban 20, 30, or 40 mg once daily versus low-molecular-weight heparin followed by vitamin K antagonists	patients with deep vein thrombosis	open

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Trial	Treatments	Patients	Trials design and methods
Einstein-DVT Evaluation , 2010 [NCT00440193] n=1731/1718 follow-up:	rivaroxaban 15 mg twice daily for 3 weeks, then 20 mg daily versus enoxaparin 1 mg/kg twice daily >=5 days, then warfarin with target INR between 2-3	Patients with Confirmed Acute Symptomatic Deep-Vein Thrombosis without Pulmonary Embolism	Parallel groups open (assessor-blind)
Einstein-PE Evaluation , 2012 [NCT00439777] n=2419/2413 follow-up: 9.8 months	rivaroxaban (15 mg twice daily for 3 weeks, followed by 20 mg once daily) for 3, 6, or 12 months versus standard therapy with enoxaparin followed by an adjusted-dose vitamin K antagonist	patients who had acute symptomatic pulmonary embolism with or without deep-vein thrombosis	Parallel groups open 38 countries
ximelagatran (without LMWH) vs LMWH/VKA			
THRIVE I , 2003 n=NA follow-up:	oral ximelagatran (24, 36, 48 or 60 mg twice daily) for 2 weeks versus dalteparin and warfarin for 2 weeks	Patients with acute DVT	
LMWH at home vs UFH in hospital			
Koopman , 1996 n=202/198 follow-up: 12 weeks	home treatment with twice daily injections of nadroparin at a dose adjusted for patients weight; versus UH (APTT adjusted dose, continuous intravenous infusion of 1250 IU per hour after initial intravenous bolus of 5000 IU) in hospital.	patients with acute symptomatic proximal DVT proven by venography or duplex scan	Parallel groups open The Netherlands, France, Italy, New Zealand Australia
Boccalon , 2000 n=99/101 follow-up: 6 months	home treatment with sub-cutaneous injection of LMWH (dalteparin sodium, enoxaparin sodium or nadroparin calciumas chosen by the attending physician) at the recommended dose followed by anticoagulant for 6months versus Sub-cutaneous injection of LMWH(dalteparin sodium, enoxaparin sodium or nadroparin calcium as chosen by attending physician) at the recommended dose followed by anticoagulant for 6 months initially in hospital for 10 +/- 2 days then at home	patienst with confirmed diagnosis (by ultrasonography or venography) of proximal DVT not more than 30 days before enrolment	Parallel groups NA France

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Trial	Treatments	Patients	Trials design and methods
Levine , 1996 n=247/253 follow-up: 90 days	home treatment by Sub-cutaneous enoxaparin 1 mg per kg body weight twice a day for at least 5 days versus UH (APTT adjusted dose, continuous intravenous infusion of 20,000 IU after initial intravenous bolus of 5000 IU) in hospital for at least 5 days	patients with acute proximal DVT proven on venography or duplex scan	Parallel groups open Canada
Ramacciotti , 2004 n=104/97 follow-up:	home treatment by once daily Subcutaneous injection of enoxaparin at a dose of 1.5 mg/kg for 5-10 days versus in hospital intravenous bolus injection of 5000 IU of UFH followed by intravenous 500 IU/kg/day adjusted to maintain an aPTT of 1.5-2.5 times the normal value for 5-10 days.	patienst with DVT symptoms for greater than or equal to 10 days and proximal lower limb DVT confirmed by duplex ultrasound or venography	Parallel groups open Brazil
Daskalopoulos , 2005 n=55/53 follow-up:	home treatment with single sub-cutaneous injection of LMWH (tinzaparin sodium) in a weight adjusted dose (175 anti Xa IU/Kg) daily for 6 months versus Intravenous bolus of 5000IU UFH followed by intrvenous infusion of UFH for 5-7 days. APTT was measured after 4 hours of the initiation of heparin administration and was repeated 6 hours thereafter to reach the therapeutic range (ratio: 1.5-2.5). Oral an	patients with acute proximal DVT confirmed by colour duplex UScan not more than 1 week onset	Parallel groups open Greece
Chong , 2005 n=150/148 follow-up: 24 months	once daily sub-cutaneous injection of enoxaparin 1.5mg/kg for a minimum of 5 days plus 10mg of warfarin for 3 months adjusted to achieve INR above 2 and within range accepted by the investigator versus 5000 IU bolus of unfractionated heparin (UFH) for a minimum of 5 days plus 10mg warfarin started on day 1 of the treatment for 3 months	patients with diagnosis of symptomatic lower extrimity DVT (proimal or distal) confirmed by either contrast venography and/or ultrasonography, be suitable for treatment in an outpatient setting	Parallel groups open Australia, New Zealand, Poland, South Africa

More details and results :

- antithrombotics for venous thrombosis in all type of patients at http://www.trialresultscenter.org/go-Q101

- LMWH for venous thrombosis in all type of patients at http://www.trialresultscenter.org/go-Q203
- heparin (UFH or LMWH) for venous thrombosis in all type of patients at http://www.trialresultscenter.org/go-Q204
- direct oral anticoagulant (DAO) for venous thrombosis in all types of patients at http://www.trialresultscenter.org/go-Q505

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Einstein-PE Evaluation, 2012:

Oral Rivaroxaban for the Treatment of Symptomatic Pulmonary Embolism. N Engl J Med 2012 Mar 26;: [22449293] 10.1056/NEJMoa1113572

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4 peripheral vascular diseases

Trial	Treatments	Patients	Trials design and methods
LMWH vs placebo			
Mannarino , 1991 n=22/22 follow-up: 6 mois	Hparine de bas poids molculaire(PM= 5000 Dalton), 15000 U od sc versus Placebo en seringues prremplies de mme aspect que le traitement	AOMI stade II	Parallel groups Double aveugle
Calabro , 1993 n=18/18 follow-up: 6 mois	Hparine de bas poids molculaire versus Placebo	AOMI stade II	Parallel groups Double aveugle

More details and results :

- antithrombotics for peripheral vascular diseases in all type of patients at http://www.trialresultscenter.org/go-Q50

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5 pulmonary embolism

Trial	Treatments	Patients	Trials design and methods
apixaban (without LMWH) vs LMWH/VKA			
AMPLIFY , 2013 [NCT00643201] n=2691/2704 follow-up: 6 mo	apixaban 10 mg twice daily for 7 days then 5 mg, twice daily, 6 months versus conventional therapy: enoxaparin 1mg/kg twice daily until INR>=2 then warfarin for an INR between 2-4, once daikly, 6 months	patients with deep vein thrombosis or pulmonary embolism	Parallel groups double blind
rivaroxaban (without LMWH) vs LMWH/VKA			
Einstein-PE Evaluation , 2012 [NCT00439777] n=2419/2413 follow-up: 9.8 months	rivaroxaban (15 mg twice daily for 3 weeks, followed by 20 mg once daily) for 3, 6, or 12 months versus standard therapy with enoxaparin followed by an adjusted-dose vitamin K antagonist	patients who had acute symptomatic pulmonary embolism with or without deep-vein thrombosis	Parallel groups open 38 countries

More details and results :

- antithrombotics for pulmonary embolism in all type of patients at http://www.trialresultscenter.org/go-Q102

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AMPLIFY, 2013:

Agnelli G, Buller HR, Cohen A, Curto M, Gallus AS, Johnson M, Masiukiewicz U, Pak R, Thompson J, Raskob GE, Weitz JI Oral apixaban for the treatment of acute venous thromboembolism. N Engl J Med 2013 Aug 29;369:799-808 [23808982] 10.1056/NEJMoa1302507

Einstein-PE Evaluation, 2012:

Oral Rivaroxaban for the Treatment of Symptomatic Pulmonary Embolism. N Engl J Med 2012 Mar 26;: [22449293] 10.1056/NEJMoa1113572

6 superficial thrombophlebitis

Trial	Treatments	Patients	Trials design and methods
LMWH vs heparin spraygel			

continued...

Trial	Treatments	Patients	Trials design and methods
Gorski (LMWH vs hep spraygel) , 2005 n=NA	-	-	
Katzenschlager (LMWH vs hep spraygel) , 2003 n=NA	-	-	
LMWH vs low dose heparin			
Belcaro (LMWH vs low dose hep) , 1999 n=NA follow-up:	LMWH versus low-dose subcutaneous heparinitm	Patients with ST and large varicose veins	
Fixed-dose LMWH vs NSAIDs			
STENOX (enox fixed dose vs NSAIDS) , 2003 n=NA	-	-	
Prophylactic LMWH vs NSAIDs			
STENOX (prophylactic LMWH vs NSAIDs) , 2003 n=NA	-	-	
Therapeutic LMWH vs saphenofemoral disconnection			
Lozano , 2003 n=NA follow-up:	Enoxaparin 1mg/kg twice daily for the first week, then 1mg/kg for 3 weeks versus saphenofemoral disconnection	patients with saphenous proximal thrombophlebitis	

More details and results :

- antithrombotics for superficial thrombophlebitis in superficial thrombophlebitis of the leg at http://www.trialresultscenter.org/go-Q218

References

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Katzenschlager (LMWH vs hep spraygel), 2003:

Belcaro (LMWH vs low dose hep), 1999:

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