REGIONAL ANESTHESIA IN PATIENTS WITH ANTITHROMBOTIC DRUGS

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CLINICAL SCENARIO: DEEP NERVE BLOCKS/NEURAXIAL BLOCKS, SINGLE PUNCTURE, WITHOUT CATHETER

- Clinically significant bleeding.
- Deep and/or non-compressible bleeding site.
- Timely Withdrawal and reinitiation of antithrombotics to reduce the risk of bleeding

DEEP NERVE BLOCKS/NEURAXIAL BLOCKS

Head, Neck
Stellate ganglion, Deep cervical plexus, Cervical paravertebral

Upper limb
Infraclavicular

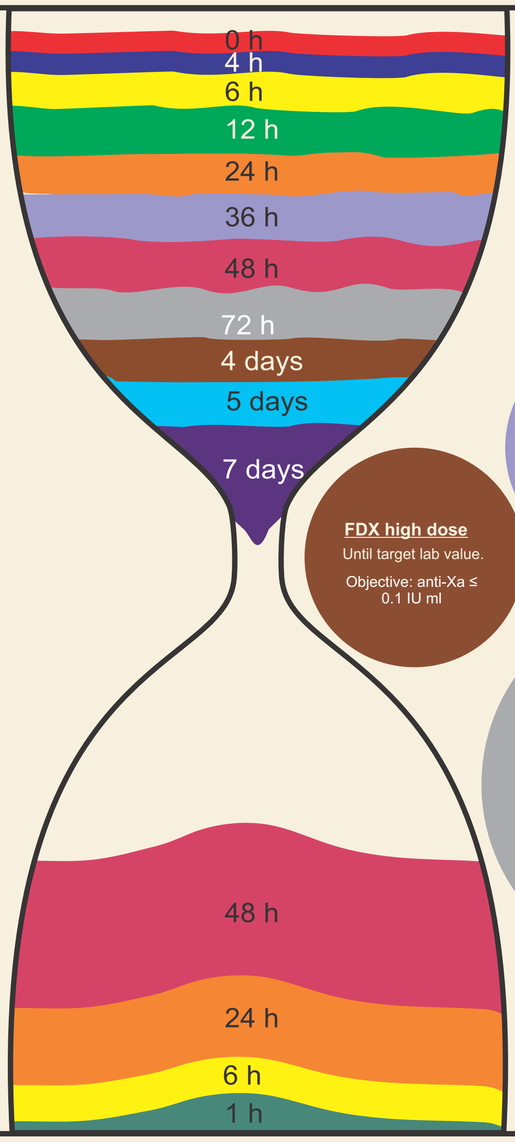
Thorax
Epidural, Thoracic paravertebral

Lower limb, back
Lumbar plexus, Psoas compartment, Lumbar sympathectomy, Lumbar paravertebral, Quadratus lumborum, Transversalis fascia, Sacral plexus, Pericapsular nerve group (PENG), Sciatic (proximal approaches), Spinal, Epidural

ANTITHROMBOTIC DRUGS

- *Vitamin K Antagonists (VKA)*
  Warfarin, Acenocoumarol, Phenprocoumon.
- *Oral Direct Factor Xa Inhibitors (ODF-Xa)*
  Rivaroxaban, Apixaban, Edoxaban (SEE TABLE).
- *Parenteral Direct Factor Xa Inhibitors*
  Fondaparinux (FDX).
- *Direct Factor IIa Inhibitor*
  Dabigatran.
- *Low Molecular Weight Heparins(LMWH)*
  Enoxaparin.
- *Unfractionated Heparin (UFH)*
- *Aspirin*
- *P2Y Inhibitors (IP2Y)*
  Clopidogrel, Prasugrel, Ticagrelor.

TIME FROM LAST DOSE UNTIL INTERVENTION



ASPIRIN
≤ 200 mg/day
No testing required

UFH low dose
4h ≤ 200 IU kg/day/SC; ≤100 IU kg/day/IV
No testing required

UFH high dose
Until target lab value (6h IV,12h SC)
Objective: aPTT or anti-Xa or ACT in normal range

LMWH low dose
anti-Xa ≤ 50 IU/kg/day; enoxaparin ≤ 40 mg/day
12h(24h if CrCl <30ml/min)
No testing required

ODF-Xa low dose
rivaroxaban, edoxaban (30h if CrCl <30 ml/min)
No testing required
LMWH high dose
24 h (48 h if CrCl <30 ml/min)
Objective: anti-Xa ≤ 0.1 IU ml

ODF-Xa low dose
Apixaban No testing required
FDX low dose ≤2.5mg/day
36h (72 h if CrCl <50 ml/min)
No testing required

DABIGATRAN low dose
48h: 220 mg/day (150 mg/day if: CrCl 30 to 50 ml/min; or age > 75; concomitant use of verapamil, amiodarone, or quinidine
No testing required

FDX high dose
Until target lab value.
Objective: anti-Xa ≤ 0.1 IU ml

ASPIRIN
> 200 mg/day
Objective: normal platelet function
VKA
Acenocoumarol Objective: INR normal
ODF-Xa high dose
72h or until target lab value if CrCl<30 ml/min
Objective:ODF-Xa level <30ng/ml
(Alternative:anti-Xa ≤ 0.1 IU ml)
DABIGATRAN high dose 150 MG 2/D
(110 mg 2/D if age ≥ 80 or use of verapamil; 110-150mg 2/D if CrCl 30-50ml/min or age 75-80)
72h or until target lab value
(until target lab value CrCl <50 ml/min)
Objective: DTI level <30 ng/ml.
(Alternative: TT in normal range)

VKA
Warfarin Fluindione
Objective:normal INR
IP2Y
5 days of Ticagrelor
5 days of Clopidogrel
No testing required

VKA
Phenprocoumon
Objective: normal INR
IP2Y
7 days of Prasugrel
No testing required

IP2Y
48h Clopidogrel 300 mg

IP2Y
24h Ticagrelor
24h Prasugrel
DABIGATRAN high dose
24h (therapeutic anticoagulation guidelines)

ASPIRIN
> 200 mg/day

UFH low dose
IV in cardiovascular surgery

TIME FROM INTERVENTION UNTIL NEXT DOSE

The next dose according to guidelines for:
- **postoperative VTE prophylaxis**
- **therapeutic anticoagulation**

VKA
ODF-Xa low-doses
Dabigatran low-doses.
LMWH low-doses
UFH low-doses /subcutaneous
FDX low-doses/subcutaneous

Routine administration post-intervention
Aspirin low dose
Clopidogrel 75mg

ABBREVIATIONS

ACT: Activated Clotting Time;aPTT: Activated Partial Thromboplastin Time:Anti-Xa: Anti-Factor Xa Activity; CrCl: Creatinine Clearance;DTI: Direct Thrombin Inhibitor;TT: Thrombin Time;INR: International Normalized Ratio

TABLE·ORAL DIRECT FACTOR XA INHIBITORS

	INDICATIONS	RIVAROXABAN	APIXABAN	EDOXABAN
LOW DOSES	VTE prophylaxis after major orthopedic surgery (hip/knee)	10 mg/d	2,5 mg 2/d	NA
LOW DOSES	Prevention of recurrent DVT and PE	10-20 mg/d (if CrCl is 15 to 50 ml/min: 10 mg without ajustments; Consider 15 mg/d instead of 20 mg/d)	2,5 mg 2/d	NA
LOW DOSES	Acute coronary Syndrome	2,5 mg 2/d	NA	NA
LOW DOSES	Prevention of atherothrombotic events in PAD	2,5 mg 2/d	NA	NA
HIGH DOSES	Stroke prevention in non-valvular atrial fibrillation	20 mg/d (15 mg/d if CrCl 15-50 ml/min)	5 mg 2/d (2.5 mg 2/d if 2 criteria are met: age ≥ 80 y, weight ≤ 60 kg, creatinine ≥ 133 µmol/l. If CrCl is from 15 to 29 ml/min:2.5 mg 2/d)	60 mgd (30 mg/d if: CrCl 15-50 ml/min; weight ≤ 60 kg; or use of cyclosporin, dronedarone, erytromicyn or ketoconazole)
HIGH DOSES	Acute VTE treatment	15 mg 2/d for 21 days, then 20 mg/d (15 mg BID x 21 days, then 15 mg once daily if CrCl 15 to 50 ml min)	10 mg 2/d per 7 days, then 5 mg 2/d	60 mg/d(30 mg/day if: CrCl 15-50 ml/min; weight ≤ 60 kg; or use of cyclosporin, dronedarone, erythromycin or ketoconazole)

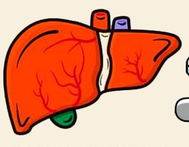
VTE: Venous Thromboembolism;DVT: Deep Vein Thrombosis;PE: Pulmonary Embolism;PAD: Peripheral Arterial Disease; CrCl: Creatinine Clearance ; 2/d:twice a day;NA: not applicable

RISK FACTORS FOR BLEEDING WITH CHRONIC USE OF ANTITHROMBOTICS

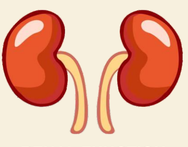

BODY WEIGHT


AGE


PATHOLOGIES AND/OR CONDITIONS THAT INCREASE THE RISK OF BLEEDING


HEPATIC FUNCTION


CONCOMITANT USE WITH OTHER DRUGS


RENAL FUNCTION

REFERENCES

Kietaibl S, Ferrandis R, Godier A, et al. Regional anaesthesia in patients on antithrombotic drugs: Joint ESAIC/ESRA guidelines. Eur J Anaesthesiol. 2022;39(2):100-132. doi:10.1097/EJA.0000000000001600