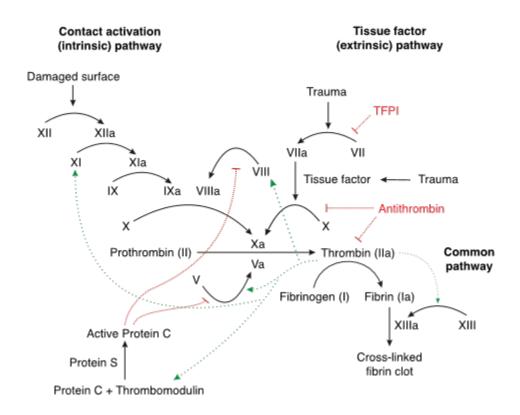
New Coagulation Drugs and Their Coagulation Results

What to expect when a patient is on a Direct Thrombin Inhibitor, Rivaroxaban, and Apixaban

Coagulation Cascade

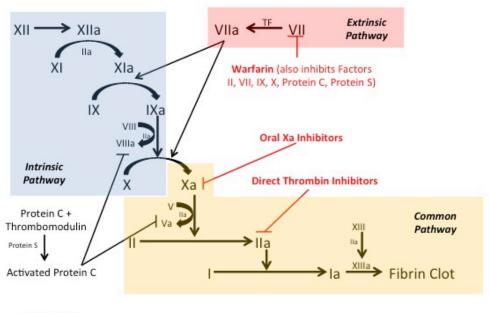


Direct Thrombin Inhibitors

- Argatroban, bivalirudin, and dabigatran are all DTI's.
- They are used for venous thromboembolism (VTE), heparin-induced thrombocytopenia (HIT), acute coronary syndromes (ACS), and non-valvular Afib.
- Marketed as not needing monitored.

How DTI's work

DTI's work by binding directly to thrombin, unlike heparin which needs a cofactor (ATIII).



I = Fibriongen

II = Prothrombin, IIa = Thrombin

TF = Tissue Factor

Rivaroxaban

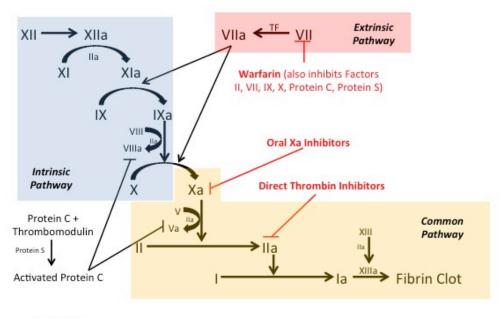
- Oral Direct Xa Inhibitor
- Used for deep vein thrombosis (DVT), pulmonary embolism (PE), and non-valvular Afib.
- Marketed as not needing monitored.

Eliquis

- Oral Direct Xa Inhibitor
- Used for venous thromboembolism (VTE) and non-valvular Afib.
- Marketed as not needing monitored.

How Rivaroxaban and Eliquis Work

Both rivaroxaban and eliquis are direct Factor Xa Inhibitors



I = Fibriongen

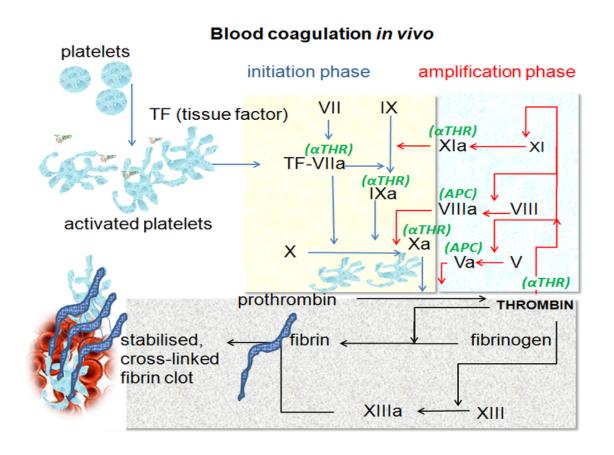
II = Prothrombin, IIa = Thrombin

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How Thrombin Time Test Works

The Thrombin Time test is the amount of time it takes fibrinogen to form fibrin when thrombin is added

The thrombin time will be elevated in the presence of DTI's and heparin.



How Anti Xa Test Works

The following diagram explains the way the anti Xa assay is performed.

First, artificial factor X is added to the patient's blood.

The heparin in the blood activates the patient's anti thrombin III and they both act to deactivate the factor X.

The more heparin in the blood, the more factor X is deactivated and the less active Xa is left in the test tube.

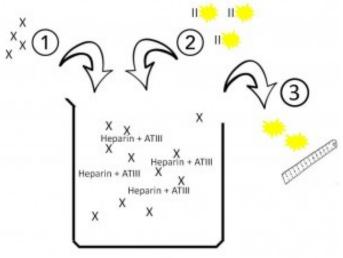
Now factor II that is marked with a yellow marker is added into the test tube.

The active Xa that was left interacts with the factor II and the yellow marker is released.

This is then measured. The more yellow, the more factor Xa, the less heparin.

The amount of heparin is deduced from putting the yellow reading on a normogram.

Then Anti Xa will be elevated in the presence of rivaroxaban, apixaban, and heparin.



Coagulation Results

Coagulation Test	Direct Thrombin Inhibitors	Factor Xa Inhibitors
PT	Increased	Increased
PTT	Increased	Increased
Fibrinogen	Decreased	No Interference
Thrombin Time	Increased	No Interference
Lupus DVVT	Increased	Increased
Protein C	Increased	Increased
Protein S	No Interference	No Interference
APC	Increased	Increased
ATIII (Chromogenic)	Increased	No Interference
Anti - Xa	No Interference	Increased

Conclusion

- DTI's will have an severely increased thrombin time.
- Rivaroxaban/Eliquis will have a normal thrombin time but a severely increased Anti-Xa assay.
- Run Anti Xa and thrombin time on elevated lupus screen or LAPTT results.
- Also run Anti Xa and thrombin time on all thrombosis panel patients.