

IV Fat Emulsion Does Not Alter Clotting Markers in Dabigatran-Treated Blood

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Background

- Dabigatran is a direct thrombin inhibitor
- It is equivalent to warfarin in prevention of stroke and DVT with similar bleeding rates
- There is no standard reversal method for patients with dabigatran-induced hemorrhage
- Intravenous fat emulsion (IFE) has been used in the treatment of overdose of lipophilic drugs
- Dabigatran is lipid soluble, particularly in pro-drug form.

Research Question

- Will IFE treatment correct *in vitro* dabigatran-induced coagulopathy of human blood samples?

Methods

- Blood draws from healthy volunteers were spiked with dabigatran or dabigatran plus IFE
- Values for Ecarin clot time (ECT), international normalized ratio (INR), and activated partial thromboplastin time (aPTT) were compared across both study arms
- Data were analyzed using paired t-tests.

Results

- The study included 18 healthy volunteers
- Addition of dabigatran caused a marked increase in ECT, INR, and aPTT compared to untreated and samples treated only with IFE
- There was no significant difference in the ECT between the dabigatran and dabigatran + IFE arms (see table)
- The INR and aPTT were statistically significantly different between the two arms

Increase in Coagulation Time: Adding Lipids to Dabigatran				
	Clotting Time Mean (SD)		Estimated Change (using paired t-tests)	
	Dabigatran	Dabigatran + Lipid	Mean (SE)	p-value
Immediate:				
ECT (1 st Primary Outcome)	123.2 (3.5)	123.7 (3.2)	0.45 (0.38)	0.25
INR	1.49 (0.12)	1.47 (0.12)	-0.01 (0.004)	0.004
aPTT	52.5 (3.9)	52.9 (4.1)	0.37 (0.16)	0.04

Discussion

- *In vitro* addition of IFE to dabigatran-treated samples did not significantly alter the ECT
- ECT provides better estimation of anticoagulation from dabigatran than does INR and aPTT
- The small decreases in INR and aPPT were statistically significant but unlikely to be clinically relevant
- These data suggest IFE may not successfully reverse the effects of dabigatran
- The major limitation of these studies is their *in vitro* nature.

Conclusion

- IFE does not reverse *in vitro* dabigatran-induced coagulopathy.

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