# E0503 - Safety and Efficacy of Anticoagulation in Management of Non-Tumoral Portal Vein Thrombosis in Patients With

**Cirrhosis: A Review of Literature and Meta-Analysis** 

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# Introduction

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- Current guidelines suggests the use of anticoagulation for treating portal vein (PV) thrombosis in patients with cirrhosis especially for recent occlusive or partially occlusive (>50% obstruction of the lumen) thrombosis of the main PV or mesenteric veins.
- The decision is usually made on a case-by-case basis because of lack of data about the safety of anticoagulation in these patients.
- We investigated the safety and efficacy of anticoagulation in non-tumoral portal vein thrombosis in patients with cirrhosis.

# Methods

- We conducted a meta-analysis that included included 12 prospective and retrospective cohort studies with a total of 997 patients.
- We compared the rates of portal vein recanalization, bleeding events, and mortality between patients with portal vein thrombosis on top of cirrhosis who received anticoagulation versus those who did not.
- Data were analyzed using fixed or random effects models depending upon measures of heterogeneity. Pooled treatment effects for means were estimated using the inverse variance method and for relative risks, the Mantel-Haenszel method. Data were analyzed using R v. 4.1.1

# **Baseline characteristics**

- The proportion of patients in Child-Turcotte- Pugh (CTP) Classes A and B were not significantly different between groups.
- The proportion in Class C was significantly higher in the placebo group RR 0.65, 95% CI 0.49-0.85, p<0.005.
- Superior mesenteric vein (SMV) involvement was significantly higher in the treatment group RR 1.27, 95% CI 1.06-1.53, p<0.05.</li>

Study	Experin Events	Total	Events	ontrol Total	Risk Ratio	RR	95%-CI	Weight (common)	Weig (rando
Navmagon 2021	41	86	34	128	1+	1.78	[1.24: 2.55]	35.9%	23.2
Ming-hua 2020	4	39		38	3			0.0%	0.0
Zhou 2020	9	32	3	30		2.56	[0.83; 7.88]	4.6%	7.5
Pettinari 2019	31	81	13	101	- <del>}</del>	2.89	[1.64; 5.10]	15.6%	17.1
Tiwari 2019	16	30	2	15		3.57	[1.05; 12.16]	4.0%	6.6
Wang 2015	26	31	23	32	(二)	1.16	[0.90; 1.51]	29.9%	26.1
Chung 2014	6	14	3	14		1.86	[0.63; 5.45]	4.5%	8.0
Mingyue Cai 2013	3	5	2	5		1.40	[0.46; 4.26]	3.2%	7.6
Senzolo 2012	12	33	1	21		- 5.78	[1.09; 30.58]	2.2%	3.9
MH Estimate (Fixed Effects Model)		351		384	\$	2.01	[1.63; 2.49]	100.0%	
MH Estimate (Random Effects Model)					Sec. 1	1.92	[1.35; 2.74]		100.0

Figure 2.	Study	Experin Events	nental Total	C Events	ontrol Total	Risk Ratio	RR	95%-CI	Weight
Progression of the	Florescu 2021 Ming hup 2020	6	54	8	53		0.75	[0.29; 1.94]	12.2%
portal vein	Zhou 2020 Pettinari 2019	4 7	32 81	13 2	30 101		0.31	[0.12; 0.81]	19.8% 3.2%
thrombosis was	CHEN 2016 Wang 2015	2 3 0	30 22 31	5 6 1	15 16 32		0.25 0.41 0.34	[0.07; 0.95] [0.13; 1.25] [0.01; 8.10]	10.1% 10.6% 2.1%
higher in the	Chung 2014 Mingyue Cai 2013 Serzolo 2012	1 0 5	14 5 33	3 2 15	14 5 21		0.43 0.20 0.23	[0.07; 2.51] [0.01; 3.28] [0.10; 0.52]	5.0% 3.6% 26.8%
placebo group	MH Estimate		341		325		0.49	[0.34; 0.70]	100.0%
	0.1 0.51 2 10 Risk Ratio of Progress Recanalization								

# Figure 3. Rate of variceal bleeding was significantly higher in the placebo group

Study	Experin Events	nental Total	Events	ontrol Total	Risk Ratio	RR	95%-CI	Weight
Florescu 2021	7	54	4	53	÷   ==	1.64	[0.54: 4.95]	9.7%
Naymagon 2021	8	86	13	128		0.92	[0.41; 2.08]	23.5%
Zhou 2020	1	32	0	30		2.94	[0.12; 71.94]	1.1%
Pettinari 2019	4	81	16	101		0.33	[0.12; 0.92]	31.6%
Tiwari 2019	2	30	2	15		0.57	[0.11; 2.97]	6.7%
Wang 2015	1	31	1	32	· · · · · · · · · · · · · · · · · · ·	1.02	[0.11; 9.31]	3.2%
Chung 2014	0	14	1	14		0.33	[0.01; 7.52]	3.2%
Mingyue Cai 2013	0	5	3	6		0.15	[0.01; 2.72]	6.9%
Senzolo 2012	1	33	5	21		0.19	[0.04; 1.02]	14.1%
MH Estimate		366		400		0.63	[0.41; 0.98]	100.0%
				0.	01 0.1 1 10 Risk Ratio of Variceal Bleed	100 ings		

# Figure 4. Mortality was significantly higher in the control group



# Outcomes

- Complete portal vein recanalization was significantly higher in patients who received anticoagulation compared to those who did not: 32% vs 16.7%; relative risk (RR) 1.92, 95% confidence interval (CI) 1.35-2.74; p<0.001.</li>
- Progression of the portal vein thrombosis was significantly lower in the treatment group with RR 0.49; 95% CI 0.34-0.7; p<0.001.</li>
- All bleeding events including portal hypertension-related and non-related were not significantly different between the groups.
- The variceal bleeding rate was significantly lower in the treatment group with RR 0.63; 95% Cl 0.41-0.98; p <0.05.</li>
- Mortality was significantly lower in the treatment group versus the no-treatment group: 7.2% vs 15.5%; RR 0.49, 95% CI 0.35-0.69; p<0.001.</li>

#### Discussion

- In the studies included in our meta-analysis, prescription of anticoagulation was made on a case-by-case basis enforcing the current guidelines.
- The proportion of patients with CTP class C was significantly higher in the control group, perhaps because physicians may be less likely to prescribe anticoagulation for patients with more advanced cirrhosis.
- Because the anticoagulation group had fewer variceal bleeding events, no difference in overall bleeding events including portal hypertension-related and non-related bleeding and lower mortality, we think the use of anticoagulation should be encouraged in patients with more advanced liver disease to decrease the progression of portal vein thrombosis and to reduce mortality.

## Conclusion

 Anticoagulation is safe and effective in the treatment of non-tumoral portal vein thrombosis in patients with cirrhosis and is associated with lower mortality.

#### Reference

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