Trombosis venosa portal en la cirrosis

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 Madrid, España
• Incidence and natural history
• Impact on cirrhosis: Indications of treatment
• Efficacy and safety of anticoagulation
US Doppler
Partial (<20%) thrombosis of the portal vein trunk
9-2015

54 yr
Acute alcoholic hepatitis (2009, 2011)
Cirrhosis

No complications of portal hypertension
2012: small esophageal varices
2015: large esophageal varices
→ propranolol

Bilirubin 0.96 mg/dl
Creatinine 0.74 mg/dl
INR 1.15
Albumin 3.7 g/dl
Platelets 59 000/µl

Child A-6, MELD 12
### Portal vein thrombosis in cirrhosis: Incidence

<table>
<thead>
<tr>
<th>Series</th>
<th>Number of patients</th>
<th>Child B/C %</th>
<th>Incidence at 1 yr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zocco, J Hepatol 2009</td>
<td>100</td>
<td>25/25%</td>
<td>12.8%</td>
</tr>
<tr>
<td>Francoz, J Hepatol 2012</td>
<td>230</td>
<td>41/33%</td>
<td>7.4%</td>
</tr>
<tr>
<td>Villa, Gastroenterology 2012</td>
<td>34</td>
<td>89/11%</td>
<td>16.6%</td>
</tr>
<tr>
<td>Maruyama, AJG 2013</td>
<td>150</td>
<td>49/8%</td>
<td>16.4%</td>
</tr>
<tr>
<td>Nery, Hepatology 2014</td>
<td>118</td>
<td>100/0%</td>
<td>4.6%</td>
</tr>
</tbody>
</table>

*7.4% de novo PVT*

12 months evaluation and average waiting list time

*Francoz 2005*
Portal vein thrombosis in cirrhosis: Incidence

1243 patients with Child A-B cirrhosis
Longitudinal study, abdominal US every 3/6 months
Mean f-up 47 months

<table>
<thead>
<tr>
<th>Time</th>
<th>Cumulative incidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 yr</td>
<td>4.6%</td>
</tr>
<tr>
<td>3 yr</td>
<td>8.2%</td>
</tr>
<tr>
<td>5 yr</td>
<td>10.7%</td>
</tr>
</tbody>
</table>

118 (9.4%) portal vein thrombosis:
- Partial (non-occlusive) 87 (73.7%)
- Partial → complete 14 (11.8%)
- Complete (occlusive) 17 (14.4%)

Independent risk factors of PVT:
- Esophageal varices
- Prothrombin time

NOT with disease progression before PVT or prothrombotic mutations

F Nery et al. Hepatology 2014
Portal vein thrombosis in cirrhosis: Cirrhosis as a prothrombotic condition

Clotting abnormalities

Endothelial damage

Reduced portal venous flow
Natural history of *partial/non-occlusive* portal vein thrombosis in cirrhosis

<table>
<thead>
<tr>
<th></th>
<th>Maruyama 2013</th>
<th>Nery 2014</th>
<th>Luca 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved (disappeared)</td>
<td>47%</td>
<td>70%</td>
<td>45%</td>
</tr>
<tr>
<td>Unchanged</td>
<td>45%</td>
<td>19%</td>
<td>7%</td>
</tr>
<tr>
<td>Worsened to occlusive</td>
<td>7%</td>
<td>11%</td>
<td>14%</td>
</tr>
<tr>
<td>Reappearance after disappearance</td>
<td>21%</td>
<td>19%</td>
<td>-</td>
</tr>
</tbody>
</table>

Diagnosis and f-up

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnosis and f-up</td>
<td>Retrospective US q. 6 m</td>
<td>Prospective US q. 3-6 m</td>
<td>Prospective CT q. 3-6 m</td>
</tr>
</tbody>
</table>

A Luca et al. Radiology 2012
H Maruyama et al. AJG 2013
F Nery et al. Hepatology 2014
Natural course of PARTIAL portal vein thrombosis in cirrhosis

42 patients with cirrhosis and partial PVT
f-up 27 months, CT q. 3-6 m
MELD 12.1, Child 8.1, ascites 67%

Natural course

Clinical outcome in relation to evolution of PVT

Improved n=19
Increased or stable n=23

<table>
<thead>
<tr>
<th>Clinical Outcome</th>
<th>Improved</th>
<th>Increased or stable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ascites</td>
<td>14</td>
<td>12</td>
</tr>
<tr>
<td>Hepatic encephalopathy</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>Gastrointestinal variceal bleeding</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Spontaneous bacterial peritonitis</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Hepatocellular carcinoma</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Hepatic decompensation</td>
<td>13</td>
<td>14</td>
</tr>
<tr>
<td>Admission for hepatic decompensation</td>
<td>12</td>
<td>11</td>
</tr>
<tr>
<td>Liver transplantation</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Off transplant waiting list</td>
<td>10</td>
<td>13</td>
</tr>
<tr>
<td>Added to transplant waiting list</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Death</td>
<td>3</td>
<td>9</td>
</tr>
</tbody>
</table>

Complete occlusion in 2 yr: 14%

A Luca et al. Radiology 2012
Clinical report

54 yr
Acute alcoholic hepatitis (2009, 2011)
Cirrhosis

No complications of portal hypertension
2012: small esophageal varices
2015: large esophageal varices
→ propranolol

Bilirubin 0.96 mg/dl
Creatinine 0.74 mg/dl
INR 1.15
Albumin 3.7 g/dl
Platelets 59 000/µl

Child A-6, MELD 12

T. Close follow-up

US Doppler
Partial (<20%) thrombosis of the portal vein trunk
9-2015
Clinical report

54 yr
Acute alcoholic hepatitis (2009, 2011)
Cirrhosis

No complications of portal hypertension
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Bilirubin 0.96 mg/dl
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Child A-6, MELD 12

US Doppler
Thrombosis of the portal vein trunk
12-2015
(3 months later)

CT
Thrombosis of the right branch and main trunk of the portal vein
12-2015
(3 months later)
• Incidence and natural history

• Impact on cirrhosis: Indications of treatment

• Efficacy and safety of anticoagulation
Portal vein thrombosis and cirrhosis

Advanced liver disease

Blood stasis
Wall changes (PHT)

Thrombosis

Thrombosis

Decreased portal blood inflow

Advanced liver disease
Longitudinal retrospective study
150 patients with viral cirrhosis
F-up 11 years
Child A/B/C 44/48/8 %

PVT occlusive/non-occlusive in
(7/21%) 28%

H Maruyama et al. AJG 2013
Impact of portal vein thrombosis on the natural history of cirrhosis

### Liver disease progression and death

(Multivariate Cox analysis on baseline predictive factors)

<table>
<thead>
<tr>
<th></th>
<th>HR</th>
<th>95% Confidence Interval</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liver disease progression</td>
<td>1.55</td>
<td>1.11-2.17</td>
<td>0.01</td>
</tr>
<tr>
<td>Age (≥60 years)</td>
<td>1.40</td>
<td>1.01-1.95</td>
<td>0.046</td>
</tr>
<tr>
<td>Body-mass index (kg/m²)</td>
<td>1.70</td>
<td>1.21-2.38</td>
<td>0.002</td>
</tr>
<tr>
<td>Esophageal varices (≥ grade2)</td>
<td>0.79</td>
<td>0.94-0.99</td>
<td>0.002</td>
</tr>
<tr>
<td>Prothrombin time (%)</td>
<td>1.70</td>
<td>1.21-2.38</td>
<td>0.002</td>
</tr>
<tr>
<td>Serum albumin (g/L)</td>
<td>0.73</td>
<td>0.63-0.84</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Decompensation</td>
<td>2.60</td>
<td>1.78-3.81</td>
<td>&lt;0.0001</td>
</tr>
</tbody>
</table>

### Impact of PVT on liver disease progression and decompensation

(Multivariate models adjusted for baseline prognostic variables)

<table>
<thead>
<tr>
<th></th>
<th>HR</th>
<th>95% CI</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liver disease progression</td>
<td>1.51</td>
<td>0.73-3.14</td>
<td>0.27</td>
</tr>
<tr>
<td>- Partial PVT</td>
<td>1.32</td>
<td>0.68-2.55</td>
<td>0.41</td>
</tr>
<tr>
<td>- Partial or Complete PVT</td>
<td>1.60</td>
<td>0.69-3.74</td>
<td>0.28</td>
</tr>
<tr>
<td>Decompensation</td>
<td>1.37</td>
<td>0.62-3.03</td>
<td>0.44</td>
</tr>
<tr>
<td>- Partial PVT</td>
<td>1.60</td>
<td>0.69-3.74</td>
<td>0.28</td>
</tr>
<tr>
<td>- Partial or Complete PVT</td>
<td>1.37</td>
<td>0.62-3.03</td>
<td>0.44</td>
</tr>
</tbody>
</table>

Longitudinal prospective study
1243 patients, US every 3/6 months
F-up 48 months
Child A-B cirrhosis

PVT non-occlusive/occlusive in
(74/14%) 14%

F Nery et al. Hepatology 2014
Enoxaparin prevents portal vein thrombosis and liver decompensation in advanced cirrhosis

70 patients with Child B7-C10 cirrhosis

Enoxaparin 4000 U/24 h sc for 48 wks vs. No treatment

Portal vein thrombosis

Decompensation

Survival

Independent risk factors (HR, Cox) of ...

... ↓ portal vein thrombosis

Enoxaparin treatment 0.009

Protein C levels 0.98

... ↓ decompensation

Enoxaparin treatment 0.33

Baseline bilirubin 1.47

Portal vein diameter 1.21

Encephalopathy 3.19

... Survival

Enoxaparin treatment 0.36

Portal vein diameter 1.34

E Villa et al.
Gastroenterology 2012
Impact of portal vein thrombosis on liver transplantation

SRTR 22291 receptors
P VT 4.02%

Post-transplantation survival

<table>
<thead>
<tr>
<th></th>
<th>1-year mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>No PVT</td>
<td>16.5%</td>
</tr>
<tr>
<td>Partial PVT</td>
<td>17.8%</td>
</tr>
<tr>
<td>Complete PVT</td>
<td>45%</td>
</tr>
</tbody>
</table>

MJ Englesbe et al. Liver Transpl 2010

C Francoz et al. Gut 2005
Impact of portal vein thrombosis on liver transplantation

Post-transplantation survival according to PVT grade

<table>
<thead>
<tr>
<th>Grade</th>
<th>1 year (%)</th>
<th>5 years (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non PVT</td>
<td>84.2</td>
<td>76.3</td>
</tr>
<tr>
<td>PVT</td>
<td>65.6</td>
<td>65.6</td>
</tr>
<tr>
<td>Grade 1</td>
<td>86</td>
<td>86</td>
</tr>
<tr>
<td>Grade 2</td>
<td>52</td>
<td>52</td>
</tr>
<tr>
<td>Grade 3</td>
<td>67</td>
<td>67</td>
</tr>
<tr>
<td>Grade 4</td>
<td>50</td>
<td>50</td>
</tr>
</tbody>
</table>

Yerdel’s classification of PVT grade

Extent of PVT and portal reconstruction methods

No PVT
PVT Physiological Reconstruction
PVT Non-Physiological Grades 2, 3, 4

Yerdel MA et al. Transplantation 2000
Clinical presentation of portal vein thrombosis in cirrhosis

Asymptomatic 50-60%
- Routine US exam
- SMV never involved

Symptomatic 40-60%
- Abdominal pain (71% intestinal infarction)
- Ascites/hydrothorax
- Variceal bleeding

Correlation between the extension of PVT and clinical presentation

<table>
<thead>
<tr>
<th>PVT presentation</th>
<th>Asymptomatic</th>
<th>Ischemic</th>
<th>Haemorrhagic</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thrombosis</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Portal trunk</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Absent</td>
<td>5 (15.6)</td>
<td>2 (13.3)</td>
<td>4 (12.5)</td>
<td>0.51</td>
</tr>
<tr>
<td>Occlusive</td>
<td>12 (37.5)</td>
<td>9 (60)</td>
<td>11 (34.4)</td>
<td></td>
</tr>
<tr>
<td>Partial</td>
<td>15 (46.9)</td>
<td>4 (26.7)</td>
<td>17 (53.1)</td>
<td></td>
</tr>
<tr>
<td>Right branches</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Absent</td>
<td>18 (56.3)</td>
<td>12 (80)</td>
<td>23 (71.9)</td>
<td>0.51</td>
</tr>
<tr>
<td>Occlusive</td>
<td>8 (25)</td>
<td>2 (13.3)</td>
<td>6 (18.8)</td>
<td></td>
</tr>
<tr>
<td>Partial</td>
<td>6 (18.8)</td>
<td>1 (6.7)</td>
<td>3 (9.4)</td>
<td></td>
</tr>
<tr>
<td>Left branches</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Absent</td>
<td>23 (71.9)</td>
<td>12 (80)</td>
<td>26 (81.3)</td>
<td>0.87</td>
</tr>
<tr>
<td>Occlusive</td>
<td>7 (21.4)</td>
<td>3 (20)</td>
<td>5 (15.6)</td>
<td></td>
</tr>
<tr>
<td>Partial</td>
<td>2 (6.3)</td>
<td>0 (0)</td>
<td>1 (3.1)</td>
<td></td>
</tr>
<tr>
<td>Mesenteric</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Absent</td>
<td>25 (78.1)</td>
<td>4 (26.7)</td>
<td>24 (75)</td>
<td>0.0001</td>
</tr>
<tr>
<td>Occlusive</td>
<td>0 (0)</td>
<td>11 (73.3)</td>
<td>0 (0)</td>
<td></td>
</tr>
<tr>
<td>Partial</td>
<td>7 (21.9)</td>
<td>0 (0)</td>
<td>8 (25)</td>
<td></td>
</tr>
<tr>
<td>Splenic</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Absent</td>
<td>27 (84.4)</td>
<td>12 (80)</td>
<td>29 (90.6)</td>
<td>0.25</td>
</tr>
<tr>
<td>Occlusive</td>
<td>2 (6.3)</td>
<td>3 (20)</td>
<td>1 (3.1)</td>
<td></td>
</tr>
<tr>
<td>Partial</td>
<td>3 (9.4)</td>
<td>0 (0)</td>
<td>2 (6.3)</td>
<td></td>
</tr>
</tbody>
</table>

L Amitrano et al. J Hepatol 2004
• Incidence and natural history

• Impact on cirrhosis: Indications of treatment

• Efficacy and safety of anticoagulation
54 yr
Acute alcoholic hepatitis (2009, 2011)
Cirrhosis

No complications of portal hypertension
2012: small esophageal varices
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Bilirrubin 0.96 mg/dl
Creatinine 0.74 mg/dl
INR 1.15
Albumin 3.7 g/dl
Platelets 59 000/µl

Child A-6, MELD 12

**T. Enoxaparin 1.5 mg/kg.d SC**
(120 mg/d, 80 kg)

---

**US Doppler**
Thrombosis of the portal vein trunk
12-2015

---

**CT**
Thrombosis of the right branch and main trunk of the portal vein
12-2015
(3 months later)
US-Doppler
   very accurate to rule out PVT

CT/MRI
   extension (*mapping*): number of vessels involved
                      (sp. SMV, SV, intrahepatic branches)
   collateral circulation
   degree of occlusion
   diagnosis of intestinal ischemia
   acuity vs. chronicity: PV remnant, PV calcifications,
                        cavernoma, abdominal fluid, collaterals
## Series of anticoagulation therapy for portal vein thrombosis in cirrhosis (135 patients)

<table>
<thead>
<tr>
<th>Author/year</th>
<th>Patients</th>
<th>Treatment</th>
<th>Duration of treatment</th>
<th>Complete / partial recanalization (%)</th>
<th>Non-response (%)</th>
<th>Time to repermeation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Francoz, 2007</td>
<td>19</td>
<td>Nadroparin → VKA (INR 2-3)</td>
<td>8.1 m</td>
<td>42/5</td>
<td>53</td>
<td>NA</td>
</tr>
<tr>
<td>Amitrano, 2010</td>
<td>28</td>
<td>Enoxaparin</td>
<td>6 m</td>
<td>75/8</td>
<td>17</td>
<td>6.5 m</td>
</tr>
<tr>
<td>Delgado, 2012</td>
<td>55</td>
<td>47 LMWH (→21 VKA) 8 VKA (INR 2-3)</td>
<td>89% &gt;3 m 67% &gt;6 m</td>
<td>45/15</td>
<td>40</td>
<td>6.2 m (range 1-56)</td>
</tr>
<tr>
<td>Senzolo, 2012</td>
<td>33</td>
<td>Nadroparin 95antiXa U/kg td</td>
<td>6 m after complete repermeation; until end f-up</td>
<td>36/27</td>
<td>37</td>
<td>5.5 m</td>
</tr>
</tbody>
</table>
Meta-analysis of series of anticoagulation therapy for portal vein thrombosis in cirrhosis

**Complete** portal vein recanalization 42%

**Partial** portal vein recanalization 21%

Series of anticoagulation for portal vein thrombosis in cirrhosis

Adverse events

<table>
<thead>
<tr>
<th>Author/ year</th>
<th>Patients</th>
<th>Treatment</th>
<th>EBL</th>
<th>Treatment-related events</th>
</tr>
</thead>
<tbody>
<tr>
<td>Francoz, 2007</td>
<td>19</td>
<td>Nadroparin → VKA</td>
<td>Yes, number NA</td>
<td>1 post-EBL bleeding</td>
</tr>
<tr>
<td>Amitrano, 2010</td>
<td>28</td>
<td>Enoxaparin</td>
<td>7 for previous bleeding</td>
<td>2 anemia by PHG</td>
</tr>
<tr>
<td>Delgado, 2012</td>
<td>55</td>
<td>47 LMWH (→21 VKA) 8 VKA</td>
<td>78% on beta-blockers</td>
<td>5 non-variceal bleeding 6 variceal bleeding</td>
</tr>
<tr>
<td>Senzolo, 2012</td>
<td>33</td>
<td>Nadroparin 95antiXa U/kg td</td>
<td>12 for primary prophylaxis</td>
<td>3 non-variceal bleeding (1 cerebral hemorrhage) 1 variceal bleeding</td>
</tr>
<tr>
<td>Werner, 2013</td>
<td>28</td>
<td>VKA</td>
<td></td>
<td>1 non-variceal bleeding</td>
</tr>
</tbody>
</table>

Pooled rate of bleeding-related events

3.3% (1.1-6.7%)

11 studies, X Qi 2015

No mortality anticoagulation related
Treat portal hypertension following guidelines:

- Primary prophylaxis: β-blockers
- Secondary prophylaxis: β-blockers + banding

Early initiation of anticoagulation after the identification of thrombosis.
Do not wait for variceal eradication!
(Amitrano et al, 4 months of delay)

Low, but definitive risk of post-banding ulcer bleeding?
### Anticoagulant therapy for portal vein thrombosis in cirrhosis: Factors related with bleeding complications

<table>
<thead>
<tr>
<th></th>
<th>Patients with bleeding complications</th>
<th>Patients without bleeding complications</th>
<th>( P ) value</th>
</tr>
</thead>
<tbody>
<tr>
<td>( n )</td>
<td>5</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Child–Pugh score</td>
<td>6.4 ± 2.1</td>
<td>7.3 ± 1.9</td>
<td>.322</td>
</tr>
<tr>
<td>MELD score</td>
<td>12 ± 2.3</td>
<td>13 ± 4.0</td>
<td>.629</td>
</tr>
<tr>
<td>Absolute platelet count ( (\times 10^9/L) )</td>
<td>51 ± 18</td>
<td>120 ± 106</td>
<td>.161</td>
</tr>
<tr>
<td>Platelet count</td>
<td></td>
<td></td>
<td>.018</td>
</tr>
<tr>
<td>&lt;50 ( \times 10^9/L )</td>
<td>3</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>≥50 ( \times 10^9/L )</td>
<td>2</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>Bilirubin (mg/dL)</td>
<td>1.6 ± 1.3</td>
<td>2.7 ± 2.7</td>
<td>.375</td>
</tr>
<tr>
<td>INR</td>
<td>1.4 ± 0.7</td>
<td>1.3 ± 0.2</td>
<td>.544</td>
</tr>
<tr>
<td>Type of anticoagulation</td>
<td></td>
<td></td>
<td>.053</td>
</tr>
<tr>
<td>VKA</td>
<td>5</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>LMWH</td>
<td>0</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td>Duration of anticoagulation treatment (mo)</td>
<td>6.4 ± 3.5</td>
<td>11.6 ± 11.4</td>
<td>.356</td>
</tr>
</tbody>
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*MG Delgado et al. CGH 2012*
102 134 pts on warfarin 2007-8

1763 with chronic liver disease

Indication: atrial fibrillation, VTE (no liver-related, no heart valve disease)

Results:
- Worse control, time in therapeutic range, 53 vs. 61%, p<0.01
- More frequent bleeding, HR 2.02, p<0.0001

Predictors of outcomes (control, hemorrhage)
- creatinine >2 mg/dl
- albumin <2.5 mg/dl
Similar risk of bleeding between traditional anticoagulation and DOAC (fXa inhibitors) in cirrhosis

<table>
<thead>
<tr>
<th></th>
<th>Any</th>
<th>Major</th>
<th>Moderate</th>
<th>Mild</th>
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</thead>
<tbody>
<tr>
<td><strong>Traditional group</strong> (LMWH and/or warfarin)</td>
<td>3/19 (16 %)</td>
<td>Fatal</td>
<td>GI bleed (1)</td>
<td>–</td>
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<td>ICH (1)</td>
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<td>Non-fatal</td>
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<td>Retroperitoneal (1)</td>
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<tr>
<td><strong>DOAC group</strong> (factor Xa inhibitors, rivaroxaban, apixaban)</td>
<td>4/20 (20 %)</td>
<td>Non-fatal</td>
<td>GI bleed (1)</td>
<td>Vaginal bleeding (1)</td>
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<td>ICH (1)</td>
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<td>GI bleed (1)</td>
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</tbody>
</table>
Clinical report

54 yr
Acute alcoholic hepatitis (2009, 2011)
Cirrhosis

No complications of portal hypertension
2012: small esophageal varices
2015: large esophageal varices → propranolol

Bilirubin 0.96 mg/dl
Creatinine 0.74 mg/dl
INR 1.15
Albumin 3.7 g/dl
Platelets 59 000/µl

Child A-6, MELD 12

T. Change of Enoxaparin for warfarin

US Doppler
Laminar (<10%) thrombosis of the portal vein trunk.
No thrombosis of the right portal vein branch
5-2016 (at ~ 6 months)
54 yr
Acute alcoholic hepatitis (2009, 2011)
Cirrhosis

No complications of portal hypertension
2012: small esophageal varices
2016: large esophageal varices → propranolol

Bilirubin 0.96 mg/dl
Creatinine 0.74 mg/dl
INR 1.15
Albumin 3.7 g/dl
Platelets 59,000/µl

Child A-6, MELD 12

**T. Withdrawal of warfarin**

**US Doppler**
Permeability of the main portal vein and branches
11-2016
(at 1 year)
Anticoagulant therapy for portal vein thrombosis in cirrhosis: Duration of therapy

Thrombosis at the end of anticoagulation

- Complete recanalization n=13
- Partial recanalization n=2

Outcome of thrombosis after anticoagulation withdrawal

- Rethrombosis n=5
  Median time: 1.3 months (0.8-5)
- Patent venous axis n=8
  Median time: 7 months (1.3-50)
- Thrombosis progression n=1
  Median time: 7.1 months
- No change n=1
  Median time: 23 months

38%

MG Delgado et al. CGH 2012
Clinical report

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Acute alcoholic hepatitis (2009, 2011)
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Child A-6, MELD 12

T. Reinitiate enoxaparin

CT
Thrombosis of the right branch of the portal vein
06-2016
(6 months later)
Portal vein thrombosis in cirrhosis
Take-home messages

**Natural history**
• Dynamic nature, specially of partial PVT

**Impact on cirrhosis**
• PVT development correlates with liver disease severity
• PVT no/controversial impact on liver disease progression and survival
• Exception: setting of liver transplantation!

**Confirm & stage**
• CT, mapping for therapeutic decisions and f-up
• Endoscopy, before therapy
Considerations for anti-coagulation:

**Bleeding risk and dosing:**
- LMWH safer than VKA
- VKA risk increases in ↑creatinine, ↓albumin, platelet <50000/µl
- Enoxaparin 1-1.5 mg/kg.d SC, no monitoring
- VKA INR 2-3

**Individualize treatment, no firm recommendations:**

(→ favours anticoagulation)
- LTx status (→ waiting list, prevent extension, SMV permeability!)
- Extent of thrombus (→ occlusive, progression)
- Acuity of thrombus (→ acute/recent, <6 m, no cavernoma)
- Symptoms (→ symptomatic)