肝硬化及其并发症的评估与管理专题 专家述评

肝硬化门静脉血栓的临床评估与治疗：当前观点

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[摘要] 门静脉血栓(PVT)是肝硬化的常见并发症之一。门静脉血流速度减慢是肝硬化PVT最主要的危险因素，而肝病病因、严重程度、止血状态、炎症和免疫机制也可能与肝硬化PVT的发生相关。肝硬化PVT的自然病史包括改善、稳定、进展和复发；非阻塞性PVT及肝功能改善可能与肝硬化PVT自发性改善有关。不同PVT的阻塞程度对肝硬化患者预后的影响并不一致；非阻塞性PVT可能不会显著影响患者预后，但阻塞性PVT可能增加患者的死亡风险，累及肠系膜静脉时还可导致肠缺血及肠梗死。肝硬化PVT的临床管理策略包括观察(暂无干预)、抗凝、溶栓和经颈静脉肝内门体分流术(TIPS)。PVT程度<50%且未累及肠系膜静脉时，可暂不干预；对于需治疗的肝硬化PVT，抗凝是一线治疗方式，而溶栓和TIPS主要用于存在抗凝禁忌证或抗凝无效的患者。本文就肝硬化PVT的临床评估、预测因素、自然病史、对预后的影响、治疗和预防等进行了阐述。

[关键词] 肝硬化；门静脉血栓形成；治疗；预防；预后

Clinical assessment and treatment of portal vein thrombosis in liver cirrhosis: Current perspectives

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[**Abstract**] Portal vein thrombosis (PVT) is a common complication of liver cirrhosis. Decreased portal vein velocity is the most important risk factor for cirrhotic PVT, and the etiology and severity of liver cirrhosis, hemostasis status, and inflammatory and immune mechanisms may also be associated with the development of cirrhotic PVT. The natural history of cirrhotic PVT includes improvement, stabilization, progression, and recurrence. Non-occlusive PVT and improvement of liver function may be associated with spontaneous improvement of cirrhotic PVT. The impact of different occlusion degree of cirrhotic PVT on patients' prognosis is inconsistent. Non-occlusive PVT may not significantly affect patients' outcomes; occlusive PVT may increase the risk of death, and PVT involving the mesenteric veins may also lead to intestinal ischemia and infarction. Clinical management strategies for cirrhotic PVT include wait-and-see strategy (no intervention), anticoagulation, thrombolysis, and transjugular intrahepatic portosystemic shunt (TIPS). When the degree of PVT is less than 50% and the mesenteric veins are not involved, immediate intervention may not be required. Anticoagulation is the first-line choice for cirrhotic PVT requiring treatment. Thrombolysis and TIPS are mainly used for patients with contraindications of anticoagulation and those who do not respond to anticoagulation. This paper reviews the clinical assessment of cirrhotic PVT and its predictors, natural history, impact on prognosis, treatment, and prophylaxis.

[**Key words**] liver cirrhosis; portal vein thrombosis/thrombus; treatment; prophylaxis; prognosis

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门静脉血栓(portal vein thrombosis，PVT)是指发生在门静脉主干及其分支的血栓，可蔓延至肠系膜静脉和脾静脉[1]。PVT是肝硬化患者最常见的静脉血栓栓塞类型，患病率高达17%，每年发病率达4.6%~6.0%[2-4]。门静脉血流速度降低是肝硬化发生PVT的主要原因[5]。自发性门体分流、脾切除和脾动脉栓塞术、内镜下静脉曲张治疗、腹腔内感染、遗传性和获得性易栓症等也可增加肝硬化PVT的风险[6-10]。PVT的阻塞程度、范围及分期可影响患者的临床表现、PVT自然病史及预后。因此，临床常需根据PVT的特征实施个体化管理策略。近年来关于肝硬化PVT的研究日益增多，各大临床指南与共识的相继发布也进一步规范了肝硬化PVT患者的临床管理。本文主要就肝硬化PVT的临床评估、预测因素、自然病史、对预后的影响、抗凝策略、预防等方面进行总结及探讨。

1 临床评估

PVT可增加肝移植手术的复杂性及增高肝移植术后的病死率，因此，建议等待肝移植的患者常规筛查PVT[11]。PVT的筛查和评估首选多普勒超声，其应用广泛、操作便捷、费用低、无辐射暴露，诊断PVT的敏感度为89%~93%，特异度为92%~99%[12-13]。此外，多普勒超声可评估门静脉血流速度，进而预判肝硬化PVT的发生风险[5]。若多普勒超声显示门静脉内动脉样血流，则提示癌栓而非PVT[14]。但多普勒超声诊断非阻塞性PVT和肠系膜静脉血栓的敏感度相对较低，且诊断准确性易受检查医师的经验、患者肥胖和肠积气的影响[15-16]，因而超声诊断PVT后，仍需通过增强CT或磁共振进行明确。若增强CT和磁共振检查提示门静脉系血管腔内造影剂充盈缺损或缺乏造影剂通过，提示为PVT；若阻塞的肝内门静脉分支、门静脉主干或肠系膜静脉周围多发迂曲的小血管，则提示门静脉海绵样变性(cavernous transformation of the portal vein，CTPV)[17-18]。此外，若增强CT动脉期提示血栓内点状或线状强化、静脉扩张、新生血管、毗邻肝细胞癌病灶、静脉壁破裂，则提示癌栓而非PVT[19]。相比于增强CT，增强磁共振无辐射暴露，且诊断肝脏恶性肿瘤及胆道疾病的敏感度更高，其诊断门静脉主干血栓的敏感度达100%，特异度达92%~98%，而诊断肠系膜上静脉(superior mesenteric vein，SMV)血栓的敏感度、特异度均为100%[20-21]。

一旦确诊为PVT，应准确评估其阻塞程度、范围和分期，以便明确PVT的进展风险以及是否需要抗血栓治疗。根据阻塞程度，PVT可分为阻塞性和非阻塞性，具体可细分为附壁PVT、部分PVT、完全PVT、条索化和CTPV。范围是指PVT有无进一步累及肠系膜静脉和脾静脉[1,11,22](图1)。分期包括近期PVT(一般发生在6个月之内)和慢性PVT(发生超过6个月)[11,22]。由于肝硬化PVT多无症状且发生时间不确定，中国肝硬化PVT管理专家共识已不推荐根据PVT发生时间来进行分期，而是推荐按照有无急性腹痛等急性PVT相关的临床症状分为急性和非急性症状性PVT[1]。

2 预测因素

门静脉血流速度<15 cm/s可预测肝硬化PVT的发生风险[23]。此外，肝硬化病因、严重程度等也与PVT的发生风险相关。2019年，Gaballa等[24]基于非酒精性脂肪性肝炎、终末期肝病模型(model for end-stage liver disease，MELD)评分、中重度腹水等5个变量建立了“PVT风险指数模型”，以预测等待肝移植患者的PVT发生风险。

全血黏弹性试验，包括血栓弹力图(thromboelastography，TEG)和旋转血栓弹力仪检测，可更全面地评估肝硬化患者的止血状态[22]。Huang等[25]发现，肝硬化PVT组的TEG反应时间明显短于无PVT组，但其他研究并未发现TEG和旋转血栓弹力仪提示的高凝状态与肝硬化PVT之间的相关性[26-28]。值得注意的是，上述研究均基于横断面数据，全血黏弹性试验提示高凝状态预测PVT发生风险的价值仍需进一步探讨。

近年来，越来越多的研究提出血栓形成与炎症和免疫机制相关[29]。Xing等[30]基于横断面数据发现，中性粒细胞/淋巴细胞比值和血小板/淋巴细胞比值与肝硬化PVT独立相关。另一项同样基于横断面数据的研究也发现，白细胞介素6(interleukin-6，IL-6)水平与肝硬化PVT独立相关[25]。Nery等[31]进行的前瞻性纵向研究纳入了107例无PVT的肝硬化患者，其中10.3%的患者在随访期间发生了PVT，基线时IL-6水平>5.5 pg/ml和淋巴细胞计数<1.2×10^9/L是PVT的独立预测因素。此外，在接受脾切除和贲门周围血管断流术的肝硬化患者中，术前和术后7 d血小板/淋巴细胞比值、术前单核细胞/淋巴细胞比值为PVT的独立预测因素[32]。最近更有学者发现，肝硬化合并新型冠状病毒肺炎(COVID-19)的患者PVT患病率明显高于无COVID-19的肝硬化患者，提示肝硬化PVT的发生可能与潜在的免疫反应相关[33]。中性粒细胞外捕网在免疫血栓形成中起着重要作用[34]，但其与肝硬化PVT的相关性仍存争议[35-36]。

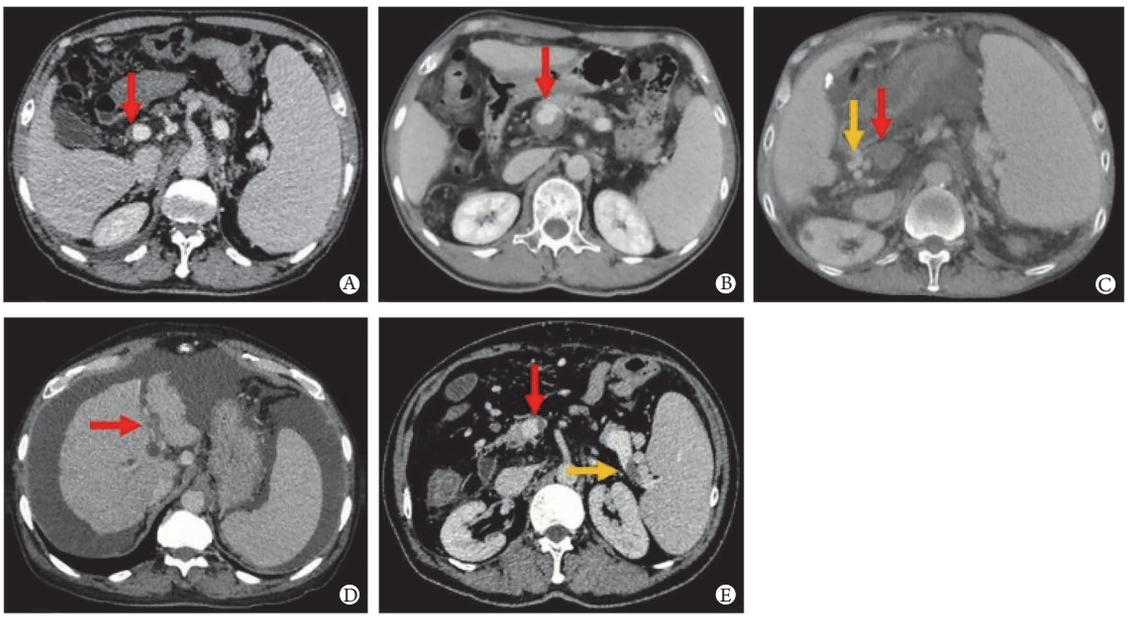

图1 肝硬化PVT的增强CT图像

Fig.1 Contrast-enhanced CT images of PVT in liver cirrhosis

A. 红色箭头示门静脉主干附壁血栓；B. 红色箭头示门静脉主干部分血栓；C. 红色箭头示门静脉主干完全血栓，黄色箭头示门静脉海绵样变性(CTPV)；D. 红色箭头示门静脉左支条索化；E. 红色箭头示肠系膜上静脉(SMV)附壁血栓，黄色箭头示脾静脉完全血栓(图片来源于北部战区总医院)

3 自然病史

肝硬化PVT的自然病史是指未接受任何抗血栓治疗时PVT的转归，包括改善、进展、稳定和复发，但各研究的定义并不一致。Luca等[37]将门静脉主干、SMV及脾静脉血栓占据管腔程度平均减少10%及以上定义为改善、减少或增加10%以内定义为稳定、增加10%及以上定义为进展，对42例肝硬化非阻塞性PVT患者进行了平均27个月的随访后，19例(45%)PVT改善，3例(7%)PVT稳定，20例(48%)PVT进展。Girleanu等[38]则将PVT占据管腔程度减少50%以上或完全再通定义为改善，减少50%以内或保持不变定义为稳定，蔓延至SMV、脾静脉或变为阻塞性PVT定义为进展，对22例肝硬化非阻塞性PVT患者平均随访20个月后，5例(22.7%)PVT改善，11例(50%)PVT稳定，6例(27.3%)PVT进展。此外，Xu等[39]将附壁血栓、部分血栓、完全血栓和条索化分别计为1、2、3和4分，将门静脉系统内每支血管的评分总和定义为门静脉系血栓评分，评分降低定义为改善、不变定义为稳定、增高定义为进展，在27例肝硬化PVT患者中，11例(40.7%)PVT改善，4例(14.8%)稳定，12例(44.4%)进展。

非阻塞性PVT似乎更易自发改善或再通[40-41]。一项前瞻性研究在长期随访后发现，9.5%(118/1243)的肝硬化患者发生了PVT，其中，超过80%是非阻塞性PVT；70%实现了自发的完全再通，明显高于荟萃分析报道的33%的肝硬化PVT自发再通率[4,40]。最近一项研究也表明，肝硬化附壁PVT自发的完全再通率明显高于部分和完全PVT(57% *vs.* 20% *vs.* 0%)[42]。此外，肝功能的动态变化也可能有助于判断PVT的转归。本课题组研究还发现，MELD评分下降是肝硬化PVT改善的预测因素[39]。

4 PVT对预后的影响

本课题组在2015年发表的系统评价发现，PVT可能会降低肝硬化患者的长期生存率[43]。Stine等[44]对3项研究进行的荟萃分析发现，PVT不仅增高了肝硬化患者的病死率，而且也增高了腹水发生率。2021年，Xian等[45]对两项研究进行的荟萃分析也发现，PVT明显降低了肝硬化患者的1年生存率。然而，这两项荟萃分析纳入的研究数量较少，意义有限，仍需进一步证实。目前，虽已有较多研究探讨了PVT与肝硬化患者预后的相关性，但均未明确PVT的阻塞程度、范围，以及是否接受抗血栓治疗，因而意义有限[46-53]。PVT的阻塞程度可能决定了其对肝硬化患者预后的影响。有两项回顾性研究纳入的患者中85%~90%为非阻塞性PVT，且未接受抗血栓治疗，结果发现，PVT未明显增加肝脏失代偿和死亡的风险[54-55]，提示非阻塞

性PVT可能不会显著影响肝硬化患者的预后。临床指南与共识也指出，PVT程度<50%时，无需接受抗血栓治疗(表1)[1,11,22,56-58]。相比之下，阻塞性PVT则可能导致不良预后。有研究纳入3295例等待肝移植的肝硬化患者，其中148例在评估肝移植时或肝移植前存在阻塞性PVT，结果发现，阻塞性PVT是等待肝移植患者死亡的独立危险因素[59]。在肝移植受体中，PVT(尤其是阻塞性PVT)可明显影响肝移植术后1年生存率[60]。此外，若PVT累及肠系膜静脉，则可能会导致肠缺血及肠梗死等危及生命的并发症，严重影响患者预后[61]。

5 抗凝治疗

抗凝是肝硬化PVT的一线治疗方式，可明显增高门静脉再通率，降低血栓进展率[62-63]。一项荟萃分析表明，抗凝后的总体PVT再通率达72%，完全再通率达41%，血栓进展率为6.9%[64]。临床指南与共识对抗凝适应证的推荐意见并不完全一致。总体来说，急性症状性PVT、血栓占据管腔>50%的近期PVT、PVT进展、累及肠系膜静脉的PVT和等待肝移植的PVT均应考虑接受抗凝治疗(表1)。

5.1 抗凝时机 多项研究表明，早期启动抗凝治疗可增高PVT再通率，降低血栓进展率[65-69]。若阻塞性PVT未能及时再通，可在数天或数周内发生CTPV；虽然CTPV可代偿部分门静脉血流，但也进一步加重了门静脉高压[70]。因此，符合抗凝适应证的患者应在全面评估出血风险及其他抗凝禁忌证后尽早启动抗凝治疗。伴高危静脉曲张或静脉曲张出血史的患者应在抗凝治疗前预防静脉曲张出血，但无需将抗凝治疗的启动时间推迟至静脉曲张消失后[1,22]。

5.2 抗凝方案 最佳的抗凝方案仍不明确。美国胃肠病学院建议应用普通肝素或低分子肝素(low molecular weight heparin，LMWH)治疗肝硬化PVT，其中，肾功能不全患者首选普通肝素，血小板减少症患者首选LMWH[56]。然而，欧洲肝病学会指出普通肝素可能不适用于肝硬化患者[57]。而Baveno Ⅶ共识指出，肝硬化PVT患者的初始抗凝可优先选择LMWH，维持抗凝可选择LMWH、维生素K拮抗剂(vitamin K antagonists，VKAs)和直接口服抗凝药(direct-acting oral anticoagulants，DOACs)[11]。LMWH需皮下注射，长期应用时患者依从性较差，且用于治疗肝硬化PVT的最佳剂量仍不清楚[71]。VKAs需根据国际标准化比值调整剂量，但由于受肝功能影响，其剂量调整常不准确。DOACs无需皮下注射，也不用根据凝血指标调整药物剂量，有助于增强患者的依从性。此外，多项临床研究及荟萃分析结果显示，DOACs在促进门静脉再通、预防血栓进展方面优于LMWH和VKAs[72-75]。然而，DOACs主要通过肝肾途径代谢，Child-Pugh B级和肌酐清除率<30 ml/min的患者应慎用，Child-Pugh C级患者不宜使用[11]。

有荟萃分析发现，停用抗凝药后PVT复发率高达46%[64]。临床指南与共识推荐的PVT抗凝周期通常为6个月，等待肝移植者可延长抗凝治疗时间，肠系膜静脉血栓及伴有遗传性血栓形成倾向者需长期抗凝[1,11,56]。

5.3 抗凝对预后的影响 抗凝可能改善肝硬化PVT患者的预后。Noronha Ferreira等[76]发现，在MELD评分≥15分的肝硬化患者中，抗凝可使患者累积生存率明显增高，但在Child-Pugh A级和MELD评分<15分的患者中，抗凝未能明显改善生存。Senzolo等[77]也发现，仅在Child-Pugh B/C级患者中，抗凝后PVT再通者的累积死亡发生率明显低于PVT稳定或进展者。然而，Chen等[78]纳入的患者MELD评分较低[抗凝组：(9.9±4)分；未抗凝组：(8.9±3)分]，发现抗凝未明显影响肝脏失代偿和死亡。此外，长期抗凝治疗可明显改善血清白蛋白水平并增高腹水的控制率[79]。有荟萃分析也发现，抗凝可明显降低食管胃静脉曲张出血的发生率，这可能与PVT再通后门静脉压力降低有关[64]。

6 溶栓治疗

溶栓药物导致的出血并发症发生风险较高，且溶栓用于治疗肝硬化PVT的临床证据也非常欠缺，故不作为首选治疗方式[80-81]。仅美国肝病学会实践指导指出溶栓治疗可用于抗凝后仍持续存在肠缺血的近期PVT患者，其他临床指南与共识并未推荐溶栓治疗(表1)。

目前，仅一项队列研究探讨了全身溶栓治疗肝硬化PVT的有效性和安全性。2010年，de Santis等[82]前瞻性纳入了9例肝硬化近期PVT患者，其中5例PVT为阻塞性、5例累及SMV，所有9例患者均接受≤7 d的全身溶栓联合LMWH抗凝治疗，4例PVT完全溶解，4例部分溶解，1例无应答，治疗期间无患者发生严重出血。但该研究仅纳入9例患者，有关全身溶栓的安全性仍需进一步验证。

局部溶栓治疗肝硬化PVT的证据相对多一些。1995年，Blum等[83]报道了7例行经颈静脉肝内门体分流术(transjugular intrahepatic portosystemic shunt，TIPS)治疗的肝硬化阻塞性PVT患者的结局，所有患者在行TIPS的同时接受了局部溶栓治疗，其中5例PVT完全溶解、2例部分溶解，治疗期间无患者发生出血事件。

表1 临床指南与共识对肝硬化PVT管理策略的推荐意见

Tab.1 Recommendations of clinical guidelines and consensus on the management strategies for cirrhotic PVT

管理策略	美国胃肠病学院临床指南(2020)[56]	美国肝病学会实践指导(2020)[22]	欧洲肝病学会临床实践指南(2015)[57]	Baveno Ⅶ门静脉高压共识(2021)[11]	中国肝硬化PVT管理专家共识(2020)[13]	欧洲肝脏重症监护组专家共识(2019)[58]
观察，暂无干预	未提及	近期肝内门静脉分支血栓或门静脉主干血栓程度<50%	未提及	未提及	PVT程度<50%且未累及肠系膜静脉	未提及
抗凝治疗	急性完全性门静脉主干血栓 肠系膜静脉血栓 PVT蔓延至肠系膜静脉 慢性PVT但存在以下几种中的一种： (1)遗传性易栓症 (2)血栓进展 (3)既往因血栓累及肠系膜静脉引起肠缺血 等待肝移植	近期且程度>50%的门静脉主干血栓 近期且程度>50%的肠系膜静脉血栓	未提及	有症状的PVT 近期且程度>50%的门静脉主干血栓 门静脉主干血栓程度<50%但合并SMV血栓或在随访期间(1~3个月)进展 等待肝移植	急性症状性PVT PVT程度≥50%合并肠系膜静脉血栓 PVT程度<50%但在随访期间进展 等待肝移植	未提及
溶栓治疗	未提及	抗凝后仍存在肠缺血的近期PVT	未提及	未提及	证据不足	未提及
经颈静脉肝内门体分流术	未提及	阻碍受体和移植物门静脉生理性吻合的慢性PVT(等待肝移植患者) 内镜或内科治疗后仍反复出血和(或)顽固性腹水的慢性PVT	抗凝未能控制PVT蔓延的等待肝移植患者	抗凝无效的门静脉主干血栓(尤其是等待肝移植的患者)	有抗凝禁忌证 抗凝效果欠佳 合并静脉曲张出血但内科止血疗效不佳 急性症状性PVT合并静脉曲张出血	广泛血栓或抗凝无效

PVT.门静脉血栓；SMV.肠系膜上静脉

2020年，张文广等[84]报道了11例伴消化道出血或腹水的肝硬化急性广泛性PVT患者，均接受TIPS+局部溶栓+血栓抽吸+术后抗凝联合治疗，其中9例门静脉主干血栓清除率≥90%、2例≥50%，7例SMV血栓清除率≥90%、4例≥50%，治疗期间无患者发生严重出血。

相比于抗凝和TIPS，局部溶栓治疗急性SMV血栓似乎更有效，且未明显增加出血风险。一项回顾性研究纳入了32例接受肠切除术和血栓切除术的肝硬化急性SMV血栓患者，术后接受局部溶栓或抗凝治疗以清除残余血栓，局部溶栓组术后7 d血栓完全再通率明显高于抗凝组(80.0% *vs.* 29.4%)，二次手术风险明显低于抗凝组(20.0% *vs.* 70.6%)，30 d生存率明显高于抗凝组(93.3% *vs.* 58.2%)，两组腹腔内出血(20.0% *vs.* 11.8%)和小出血(20.0% *vs.* 35.3%)事件发生率差异无统计学意义[85]，但该研究人群均为肠切除术和血栓切除术后患者，且仅约40%患有肝硬化。一项随机对照试验比较了局部溶栓和TIPS治疗肝硬化急性症状性PVT的有效性和安全性，20例接受经肠系膜上动脉置管局部溶栓治疗、20例接受TIPS，两组患者的症状均在48 h内好转，PVT均部分或完全再通；长期随访发现，两组患者PVT均保持再通或稳定；接受局部溶栓的患者SMV和脾静脉血栓明显改善，但接受TIPS的患者SMV和脾静脉血栓未明显改善，随访期间出血事件发生率差异无统计学意义[86]。

7 TIPS治疗

TIPS可加快门静脉进入肝脏的血流速度，持续冲刷门静脉，以实现PVT再通[87]。一项荟萃分析发现，在无CTPV的肝硬化PVT患者中，TIPS的成功率为98.9%，伴CTPV的肝硬化PVT患者中，TIPS的成功率为92.3%；然而，TIPS术后易导致肝性脑病等并发症，其术后肝性脑病的1年累积发生率高达16.4%[88]。故TIPS不作为PVT的一线治疗方式。临床指南与共识对TIPS适应证的推荐意见并不完全一致。总体来说，TIPS可用于抗凝无效或存在抗凝禁忌证的PVT患者、合并门静脉高压相关症状的PVT患者及伴有慢性PVT的等待肝移植患者(表1)。

Thornburg等[89]报道，在等待肝移植的患者中，经脾或经肝门静脉再通-TIPS治疗的61例肝硬化慢性PVT的成功率为98%，中位随访19.2个月后，门静脉管腔通畅率为92%；其中，在接受肝移植的患者中，96%可通过端端吻合门静脉成功完成肝移植术。在非肝移植候选者中，TIPS术后总体PVT再通率可达78%~95%，与内镜下静脉曲张套扎术联合非选择性β-受体阻滞剂相比，TIPS能更有效地预防食管静脉曲张出血[90]。此外，TIPS治疗慢性

PVT较抗凝可能更具优势。一项前瞻性研究纳入了396例肝硬化PVT患者，其中90.4%为慢性PVT、32.6%伴CTPV，伴难治性腹水或6周内静脉曲张出血史的患者接受了TIPS，其余患者若PVT阻塞程度>50%或累及SMV则接受抗凝治疗，结果发现，TIPS术后总体PVT再通率高于抗凝治疗(99.0% *vs*. 36.5%)，大出血发生率低于抗凝治疗(14.4% *vs*. 22.2%)，但显性肝性脑病发生率高于抗凝治疗(28.8% *vs*. 3.2%)[42]。另一项回顾性研究也发现，TIPS术后PVT的Yerdel分级下降的患者比例(78.0% *vs*. 29.0%)和PVT完全再通率(33% *vs*. 0%)明显高于抗凝治疗[91]。值得注意的是，在肝硬化PVT患者中，TIPS术后抗凝治疗不会增高PVT再通率，也未降低PVT复发率，因此，TIPS术后可能无需常规抗凝治疗[42,92]。

8 药物预防

一项随机对照试验探讨了抗凝预防肝硬化PVT的作用。Villa等[93]将纳入的70例肝硬化无PVT患者随机分为预防性抗凝组(每日皮下注射依诺肝素4000 U，持续1年)与无抗凝组。所有患者均为Child-Pugh B/C级，且近3个月未发生肝脏失代偿事件。结果显示，预防性抗凝组的累积PVT发生率(P=0.006)和累积肝脏失代偿发生率(P<0.0001)明显低于无抗凝组，累积生存率明显高于无抗凝组(P=0.020)。此外，预防性抗凝组肠细胞损伤和微生物易位标志物水平较基线时明显降低(肠脂肪酸结合蛋白：P=0.003；IL-6：P=0.023；16S rDNA：P<0.001；可溶性CD14：P=0.004)，细菌感染率也明显低于无抗凝组(P=0.019)。因此，除降低PVT发生风险外，抗凝还可延缓肝病进展及改善患者生存，这可能与肠道微循环的改善和细菌易位的减少相关。

预防性抗凝及其他抗血栓药物也可降低肝硬化患者脾切除术后PVT的发生率，且未明显增加术后出血风险[7,94]。此外，预防性溶栓联合阿司匹林可改善肝硬化脾切除术后患者的预后。一项网状荟萃分析结果显示，早期应用LMWH联合低分子葡聚糖可能是肝硬化脾切除术后预防PVT的最佳方式，但目前尚无研究报道预防性抗凝对脾切除术后长期预后的影响[95]。此外，尚无研究探讨预防性抗凝等抗血栓治疗对其他PVT高危人群的价值。

9 总结与建议

肝硬化PVT的临床管理需个体化。附壁PVT无症状，且有着较高的自发再通率，也不会影响预后，因此暂时无需抗血栓治疗；相反，近期的部分或完全PVT、急性症状性PVT、肠系膜静脉血栓和等待肝移植患者的PVT常会影响预后，需尽早启动抗血栓治疗。抗凝是PVT的一线治疗方式，可明显增高门静脉再通率，并可能改善晚期肝病患者的预后，但最佳的抗凝策略仍不明确。TIPS可用于治疗存在抗凝禁忌证的PVT、慢性PVT及合并门静脉高压相关症状的PVT。未来应进一步明确PVT的预测因素、不同阻塞程度和范围的PVT的自然病史、自发再通或进展的预测因素及其对预后的影响，以精准指导PVT的临床管理。预防性抗凝可降低PVT发生率、肝脏失代偿发生率及病死率，但仍需更多的研究证据支持。

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