

KARACİĞER, SAFRA YOLLARI CERRAHİSİ VE KARACİĞER NAKLİ SONRASI HASTA TAKİBİ

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GİRİŞ

Hepatik cerrahi organ anatomisinin güçlüğü ve organın vital fonksiyonları nedeniyle oldukça zorlayıcı bir cerrahi prosedürdür. Organın patofizyolojisi ve metabolizması çok iyi analiz edilmelidir. Karaciğer nakli 1963 yılından itibaren son dönem karaciğer yetmezliği ve akut karaciğer yetmezliğinin tek tedavi yöntemi olarak kabul görmüştür(1).

Malign tümörler, benign tümörler, intrahepatik safrayolları hastalıkları, kist hidatik, bazı koagülasyon bozuklukları, apseler, metabolik hastalıklar ve masif karaciğer travmaları gibi karaciğer hastalıklarının tedavisinde kullanılmaktadır. Halen yüksek mortalite ve morbidite oranlarıyla seyretmektedir. Bu nedenle karaciğer nakli sonrası yoğun bakım ünitesinden itibaren multidisipliner bir yaklaşımla hasta takibi yapılır. Karaciğer transplantasyon olgularının postoperatif yoğun bakım yönetimi zaman içinde hızlı bir gelişme göstermiştir. Preoperatif hazırlık süreci, cerrahi teknik, peroperatif anestezi yönetimi, organ prezervasyonu, yoğun bakım ve immüno-supresyon tedavilerindeki gelişmeler ile 1998'de %33 düzeyinde olan on yıllık sağkalım 2010'da %66'a yükselmiştir(2,3).

Postoperatif dönemde hastanın preoperatif durumu ve postoperatif herhangi bir komplikasyon gelişip gelişmemesine bağlı olarak sorunsuz

veya ileri derecede komplike seyredebilir(4). Postoperatif bakım süreci; hastaların bakımı, stabilizasyon ve büyük organ sistemlerinin iyileştirilmesi, greft fonksiyonunun değerlendirilmesi, uygun immüno-supresyon sağlanması, transplantasyonla bağlantılı komplikasyonların erken teşhisini, izlenmesini ve tedavisini içerir.

Hernekadar bazı merkezlerde operasyon süresince stabil seyreden ve komplikasyon gelişmeyen hastalar, postanestezi bakım merkezinden servise transfer edildiği bildirilse de, transplantasyon sonrası ilk bakım bir yoğun bakım ünitesinde gerçekleşmelidir. Alıcılarda genellikle ilk 24-48 saatte mekanik ventilasyon desteği gerekir. Bu süreçte kısa etkili, hepato/nefrotoksik olmayan ilaçlarla (propofol, midazolam, remifentanyl, vb) hastanın vital fonksiyonlarına göre sedoanaljezi uygulanır. Weaning süreci uzayan hastalarda nörolojik muayene için sedasyona ara verilmelidir(5). Amaç yeterli oksijen sunumu, optimal asit-baz dengesi ve stabil hemodinami olmalıdır. Böbrek fonksiyonları korunmalı, greft uyumu sağlanmalı, erken postoperatif dönemde enfeksiyon profilaksisi sağlanmalıdır(6). Profilaksi için genellikle üçüncü kuşak sefalosporin ve oral nistatin başlanır. Ekstübasyonla ilgili klavuz prosedürler, normal standart postoperatif hastadan farklı değildir. Bunun yanında weaning denenmeden önce yeni greftin fonksiyonunun iyi olmasına dair belirtiler olmalıdır. Ekstübasyon sonrası olası akciğer komplikasyonlarını önleme bakımından solunum fizyoterapisi ve erken mobilizasyon yapılmalıdır.

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.düzelmeyen hipoglisemi ,AST >5000 ıu/L,factor 8 normalin %60 altında olması bulunur.Medikal tedavilerin PNF tedavisinde başarısı kısıtlıdır. İntravenöz prostaglandin E1 kullanılmaktadır .Splanknik vazodilatasyon yapması ile kan akımını artırır, immunmodülatör etkiyle greft reddi riskini azaltır(89).

Karaciğer transplantasyonu sonrası rejeksiyon sıklığı ,alıcıların ortalama %20 si nakil sonrası herhagibir dönemde en az bir atak geçirebilir. Akut atakların çoğu nakil sonrası bir haftaya kadar görülmez.Erken rejeksiyon atakları genellikle ABO uyumsuz greftlerde ve güçlü pozitif prettransplantasyon sitotoksik cross match olanlarda daha sık görülür.Klinik semptomlar kullanılan immünsüpresifler nedeniyle beklenenden hafif seyreder.En sık ateş ,huzursuzluk,serum transaminaz ,serum bilirubin yüksekliği ile bulgu verir .Bulgular nedeniyle mekanik komplikasyonlar ve septik tablodan ayırıcı tanı yapılmalıdır.Kesin tanı greftin histolojik değerlendirilmesidir.Hafif ataklar immünsüpresif dozlarının artırılması ile tedavi edilir. Orta ve Şiddetli ataklar genellikle yüksek doz kortikosteroidlerle tedavi edilir.

Sonuç

KT uygulanan hastaların yoğun bakım izlemi multidisipliner bir yaklaşımı gerektirir. Olguların yoğun bakım yönetiminde özellikle hemodinamik stabilizasyon, ağır koagülopatinin düzeltilmesi, solunumun düzelmesi ve mekanik ventilasyon süresinin kısa olması , uygun sıvı-elektrolit tedavisi, böbrek fonksiyonlarının korunması ve takibi greft rejeksiyonun önlenmesi ve enfeksiyon profilaksisi/ tedavisi yapılması bakımından büyük önem taşır.

KAYNAKLAR

1. Shi x,Peng Z.,Biliary complications in orthotopic liver transplantation :mechanism ,diagnosis ant treatment. Journal of Nanjing Medical University 2009;23:87-92
2. Nandhakumar A, McCluskey SA, Srinivas C, Chandy TT. Liver transplantation: Advances and perioperative care. Indian J Anaesth 2012;56:326-35.
3. Åberg F, Isoniemi H, Höckerstedt K. Long-term results of liver transplantation. Scand J Surg 2011;100:14-21.
4. Razonable RR, Findlay JY, O’Riordan A, Burroughs SG, Ghobrial RM, Agarwal B, et al. Critical care issues in patients after liver transp.
5. Randall HB, Klintmalm GB. Postoperative intensive care management: adult liver transplant recipients. In: Busuttill BW, Klintmalm KG, editors. Transplantation of the liver. 2nd ed. Philadelphia: Elsevier Saunders; 2005. p. 833-51.
6. Feltracco P, Barbieri S, Galligioni H, Michieletto E, Carollo C, Ori C. Intensive care management of liver transplanted patients. World J Hepatol 2011;3:61-71
7. Gülay H, Arslan G, Haberal M. Böbrek ve karaciğer transplantasyonlarında yoğun bakım ilkeleri. Yoğun Bakım Sorunları ve Tedavileri içinde: Şahinoğlu H, editör. Türkiye Klinikleri, Ankara 2003:472-87.
8. Smyrniotis V, Kostopanagiotou G, Theodoraki K, Tsantoulas D, Contis JC. The role of central venous pressure and type of vascular control in blood loss during major liver resections. Am J Surg 2004;187:398-402.
9. Watanabe I, Mayumi T, Arishima T, Takahashi H, Shikano T, Nakao A, et al. Hyperlactemia can predict the prognosis of liver resection. Shock 2007;28:35-8.
10. Groeneveld AB, Navickis RJ, Wilkes MM. Update on the comparative safety of colloids: a systematic review of clinical studies. Ann Surg 2011;253:470-83.
11. Reinhart K, Perner A, Sprung CL, Jaeschke R, Schortgen F, Johan Groeneveld AB, et al. Consensus statement of the ESICM task force on colloid volume therapy in critically ill patients. Intensive Care Med 2012;38:368-83.
12. Liumbruno GM, Bennardello F, Lattanzio A, Piccoli P, Rossettias G; Italian Society of Transfusion Medicine and Immunohaematology (SIMITI). Recommendations for the use of albumin and immunoglobulins. Blood Transfus 2009;7:216-34.
13. Mandell MS, Tsou MY. The development of perioperative practices for liver transplantation: advances and current trends. J Clin Med Assoc 2008;71:435-41.
14. Geerse DA, Bindels AJ, Kuiper MA, Roos AN, Spronk PE, Schultz MJ. Treatment of hypophosphatemia in the intensive care unit: a review. Crit Care 2010;14:R147.
15. Shor R, Halabe A, Rishver S, Tilis Y, Matas Z, Fux A, et al. Severe hypophosphatemia in sepsis as a mortality predictor. Ann Clin Lab Sci 2006;36:67-72.
16. Xia VW, Ghobrial RM, Du B, Chen T, Hu KQ, Hiatt JR, et al. Predictors of hyperkalemia in the prereperfusion, early postreperfusion, and late postreperfusion periods during adult liver transplantation. Anesth Analg 2007;105:780-5.
17. Akdur A, Sevmiş Ş, Karakayalı H. Erişkin karaciğer naklinde postoperatif bakım. J Turk Soc Intens Care 2010;9:85-97
18. Raj D, Abreo K, Zibari G. Metabolic alkalosis after orthotopic liver transplantation. Am J Transplant 2003;3:1566-9.
19. Kozek-Langenecker SA, Afshari A, Albaladejo P, Santullano CA, De Robertis E, Filipescu DC, et al. Man-

- agement of severe perioperative bleeding: guidelines from the European Society of Anaesthesiology. *Eur J Anaesthesiol* 2013;30:270-382.
20. NICE-SUGAR Study Investigators, Finfer S, Chittock DR, Su SY, Blair D, Foster D, et al. Intensive versus conventional glucose control in critically ill patients. *N Engl J Med* 2009;360:1283-97.
 21. Rudin A, Lundberg JF, Hammarlund-Udenades M, Flisberg P, Werner MU. Morphine metabolism after major liver surgery. *Anesth Analg* 2007;104:1409-14.
 22. Chandok N, Watt KD. Pain management in the cirrhotic patient: the clinical challenge. *Mayo Clin Proc*. 2010;85:451-458 [PMC free article] [PubMed] [Google Scholar]
 23. Krenn CG, De Wolf AM. Current approach to intraoperative monitoring in liver transplantation. *Curr Opin Organ Transplant* 2008;13:285-90.
 24. Ballantyne JC, Carr DB, deFerranti S, et al. The comparative effects of postoperative analgesic therapies on pulmonary outcome: cumulative meta-analyses of randomized, controlled trials. *Anesth Analg*. 1998;86:598-612 [PubMed] [Google Scholar]
 25. Schumann R, Zabala L, Angelis M, Bonney I, Tighiouart H, Carr DB. Altered hematologic profiles following donor right hepatectomy and implications for perioperative analgesic management. *Liver Transpl*. 2004;10:363-368 [PubMed] [Google Scholar]
 26. Martin RC, II, Jarnagin WR, Fong Y, Biernacki P, Blumgart LH, DeMatteo RP. The use of fresh frozen plasma after major hepatic resection for colorectal metastasis: is there a standard for transfusion? *J Am Coll Surg*. 2003;196:402-409 [PubMed] [Google Scholar]
 27. Schumann R, Zabala L, Angelis M, Bonney I, Tighiouart H, Carr DB. Altered hematologic profiles following donor right hepatectomy and implications for perioperative analgesic management. *Liver Transpl*. 2004;10:363-368 [PubMed] [Google Scholar]
 28. Fazakas J, Tóth S, Füle B, et al. Epidural anesthesia? No of course. *Transplant Proc*. 2008;40:1216-1217 [PubMed] [Google Scholar]
 29. Page A, Rostad B, Staley CA, et al. Epidural analgesia in hepatic resection. *J Am Coll Surg*. 2008;206:1184-1192 [PubMed] [Google Scholar]
 30. Mimos O, Incagnoli P, Josse C, et al. Analgesic efficacy and safety of nefopam vs. propacetamol following hepatic resection. *Anaesthesia*. 2001;56:520-525 [PubMed] [Google Scholar]
 31. Ko JS, Choi SJ, Gwak MS, et al. Intrathecal morphine combined with intravenous patient-controlled analgesia is an effective and safe method for immediate postoperative pain control in live liver donors. *Liver Transpl*. 2009;15:381-389 [PubMed] [Google Scholar]
 32. Siniscalchi A, Pavesi M, Piraccini E, De Pietri L, Braglia V, Di Benedetto F, et al. Right ventricular end-diastolic volume index as a predictor of preload status in patients with low right ventricular ejection fraction during orthotopic liver transplantation. *Transplant Proc* 2005;37:2541-3.
 33. Della Rocca G, Costa MG, Coccia C, Pompei L, Pietropaoli P. Preload and haemodynamic assessment during liver transplantation: a comparison between the pulmonary artery catheter and transpulmonary indicator dilution techniques. *Eur J Anaesthesiol* 2002;19:868-75.
 34. De Wolf AM. Pulmonary artery catheter: Rest in peace? Not just quite yet. *Liver Transpl* 2008;14:917-8.
 35. Tam NL, He XS. Clinical management of portopulmonary hypertension. *Hepatobiliary Pancreat Dis Int* 2007;6:464-9.
 36. Saner FH, Sotiropoulos GC, Radtke A, Fouzas I, Molmenti EP, Nadalin S, et al. Intensive care unit management of liver transplant patients: a formidable challenge for the intensivist. *Transplant Proc* 2008;40:3206-8
 37. Johnston SD, Morris JK, Cramb R, et al: Cardiovascular morbidity and mortality after ortotopic liver transplantation. *Transplantation* 73:901,2002
 38. O'Brien JD, Ettinger NA: Pulmonary complications of liver transplantation. *Clin Chest Med* 17:99,1996.
 39. Ripoll C, Catalina MV, Yotti R, Olmedilla L, Pérez-Peña J, Lo Iacono O, et al. Cardiac dysfunction during liver transplantation: incidence and preoperative predictors. *Transplantation* 2008;85:1766-72.
 40. Zardi EM, Abbate A, Zardi DM, Dobrina A, Margiotta D, Van Tassell BW, et al. Cirrhotic cardiomyopathy. *J Am Coll Cardiol* 2010;56:539-49.
 41. Glauser FL. Systemic hemodynamic and cardiac function changes in patients undergoing orthotopic liver transplantation. *Chest* 1990;8:1210-5.
 42. Navasa M, Feu F, García-Pagán JC, Jiménez W, Llach J, Rimola A, et al. Hemodynamic and humoral changes after liver transplantation in patients with cirrhosis. *Hepatology* 1993;17:355-60.
 43. Gadano A, Hadengue A, Widmann JJ, Vachiere F, Moreau R, Yang S, et al. Hemodynamics after orthotopic liver transplantation: study of associated factors and long-term effects. *Hepatology* 1995;22:458-65.
 44. Wagener G, Gubitosa G, Renz J, Kinkhabwala M, Brentjens T, Guarrera JV, et al. Vasopressin decreases portal vein pressure and flow in the native liver during liver transplantation. *Liver Transpl* 2008;14:1664-70.
 45. Hong SH, Lee JM, Choi JH, Chung HS, Park JH, Park CS. Perioperative assessment of terlipressin infusion during living donor liver transplantation. *J Int Med Res* 2012;40:225-6.
 46. Skagen CL, Said A. Vasoconstrictor use in liver transplantation: is there evidence for rational use? *Minerva Gastroenterol Dietol* 2010;56:279-96.
 47. Cao Z, Gao Y, Tao G. Vasoplegic syndrome during liver transplantation. *Anesth Analg* 2009;108:1941-3.
 48. Mukhtar A, Salah M, Aboulfetouh F, Obayah G, Samy M, Hassanien A, et al. The use of terlipressin during living donor liver transplantation: Effects on systemic and splanchnic hemodynamics and renal function. *Crit Care Med* 2011;39:1329-34
 49. Murphy ND, Kodakat SK, Wendon JA, Jooste CA, Muiesan P, Rela M, et al. Liver and intestinal lac-

- tate metabolism in patients with acute hepatic failure undergoing liver transplantation. *Crit Care Med* 2001;29:2111-8.
50. Savale L, O'Callaghan DS, Magnier R, Le Pavec J, Hervé P, Jais X, et al. Current management approaches to portopulmonary hypertension. *Int J Clin Pract Suppl* 2011;169:11-8
 51. Åberg F, Isoniemi H, Höckerstedt K. Long-term results of liver transplantation. *Scand J Surg* 2011;100:14-21.
 52. Randall HB, Klintmalm GB. Postoperative intensive care management: adult liver transplant recipients. In: Busuttill BW, Klintmalm KG, editors. *Transplantation of the liver*. 2nd ed. Philadelphia: Elsevier Saunders; 2005. p. 833-51.
 53. Mc Allister VC, Grant DR, Roy A, et al: Right phrenic nerve injury in orthotopic liver transplantation. *Transplantation* 55:826,1993
 54. Krowka MJ, Cortese DA: Hepatopulmonary syndrome. *Chest* 105:1528,1994
 55. Figueiredo F, Dickson ER, Pasha T, Kasparova P, Therneau T, Malinchoc M, et al. Impact of nutritional status on outcomes after liver transplantation. *Transplantation* 2000;70:1347-52.
 56. Plauth M, Cabré E, Riggio O, Assis-Camilo M, Pirlich M, Kondrup J, et al. ESPEN Guidelines on Enteral Nutrition: Liver Disease. *Clinical Nutrition* 2006;25:285- 94.
 57. McClave SA, Martindale RG, Vanek VW, McCarthy M, Roberts P, Taylor B, et al. Guidelines for the Provision and Assessment of Nutrition Support Therapy in the Adult Critically Ill Patient: Society of Critical Care Medicine (SCCM) and American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.). *JJPEN J Parenter Enteral Nutr* 2009;33:277-316.
 58. Montejo González JC, Mesejo A, Bonet Saris A; Metabolism and Nutrition Working Group of the Spanish Society of Intensive Care Medicine and Coronary units. Guidelines for specialized nutritional and metabolic support in the critically-ill patient: update. Consensus SEMICYUC-SENPE: liver failure and liver transplantation. *Nutr Hosp* 2011;26:27- 31.
 59. Kerwin AJ, Nussbaum MS. Nutritional support of critically ill organ transplantation patients. In: Faber P, Siervo M, editors. *Nutrition in critical care*. 63.1st ed. Cambridge: Cambridge University Press; 2014. p. 221-7.
 60. Herrero JI, Benloch S, Bernardos A, Bilbao I, Castells L, Castroagudin JF, et al. Gastrointestinal complications in liver transplant recipients: MITOS study. *Transplant Proc* 2007;39:2311-13.
 61. Kwon HJ, Kim KW, Song GW, Hwang S, Ha HK, Lee SG. Uncommon gastrointestinal complications after liver transplantation: radiologic findings and clinical features. *Acta Radiol* 2013;54:1- 7.
 62. Kemmer N, Neff G. Recipient-based approach to tailoring immunosuppression in liver transplantation. *Transplant Proc* 2010;42:1731-37.
 63. Kuse ER, Langefeld I, Jaeger K, Külpmann WR. Procalcitonin-a new diagnostic tool in complications following liver transplantation. *Intensive Care Med* 2000;26:187-92.
 64. Chaudhary A, Humar A. Graft dysfunction and technical complications after liver transplant. In: Al-Khafaji A, editor. *ICU care of abdominal organ transplant patients*. 1st ed. New York: Oxford University Press; 2013. p. 135- 55.
 65. Washington K: Update on post liver transplantation infections, malignancies, and surgical complications. *Adv Anath Pathol* 12:221,2005
 66. Collins LA, Samone MH, Roberts MS, et al: Risk factors for invasive fungal infections complicating orthotopic liver transplantations. *J Infect Dis* 170:644,1994
 67. Seehofer D, Berg T : prevention of hepatitis B recurrence after liver transplantation, *Transplantation* 80(1 Suppl):120,2005
 68. Pageaux GP, Calmus Y, Boillot O, et al: French CHI-F-01 Study Group: Steroid Withdrawal at day 14 after liver transplantation: a double blind, placebo-controlled study, *Liver transp* 10:1454,2004
 69. Gyr K, Meier R: Flumazenil in the treatment of portal systemic encephalopathy-an overview. *Intensive care Med* 17:539,1991
 70. Bronster DJ, Emre S, Boccagni P et al: Central nervous system complications in liver transplant recipients- incidence, timing, and long term follow-up. *Clin Transplant* 14:1,2000
 71. Grande L, Rimola A, Cugat e, et al: effect of venovenous bypasson perioperative renal function in liver transplantation: resultsof a randomized, controlled trial, *Hepatology* 23:1418,1996
 72. Lisman T, Porte RJ. Rebalanced hemostasis in patients with liver disease: evidence and clinical consequences. *Blood* 2010;116:878-85.
 73. Ozier Y, Steib A, Ickx B, Nathan N, Derlon A, Guay J, et al. Haemostatic disorders during liver transplantation. *Eur J Anaesthesiol* 2001;18:208-18.
 74. Coakley M, Reddy K, Mackie I, Mallett S. Transfusion triggers in orthotopic liver transplantation: a comparison of the thromboelastometry analyzer, the thromboelastogram, and conventional coagulation tests. *J Cardiothorac Vasc Anesth* 2006;20:548-53.
 75. Wang SC, Shieh JF, Chang KY, Chu YC, Liu CS, Loong CC, et al. Thromboelastography-guided transfusion decreases intraoperative blood transfusion during orthotopic liver transplantation: randomized clinical trial. *Transplant Proc* 2010;42:2590-3
 76. Kozek-Langenecker SA, Afshari A, Albaladejo P, Santullano CA, De Robertis E, Filipescu DC, et al. Management of severe perioperative bleeding: guidelines from the European Society of Anaesthesiology. *Eur J Anaesthesiol* 2013;30:270-382.
 77. Clevenger B, Mallett SV. Transfusion and coagulation management in liver transplantation. *World J Gastroenterol* 2014;20:6146-58.

78. D'Amico DF, Vitale A, Cillo U, Boccagni P, Brolese A, Zanus G, et al. Thermal homeostasis and liver transplantation. *Acta Biomed* 2003;74(Suppl 2):30-3.
79. Feltracco P, Barbieri S, Galligioni H, Michieletto E, Carollo C, Ori C. Intensive care management of liver transplanted patients. *World J Hepatol* 2011;3:61-71.
80. Benson AB, Burton JR Jr, Austin GL, Biggins SW, Zimmerman MA, Kam I, et al. 81. Differential effects of plasma and red blood cell transfusions on acute lung injury and infection risk following liver transplantation. *Liver Transpl* 2011;17:149-58.
81. Datsis K, Golling M, Ioannidis P, et al. Vascular complications following 200 liver transplants. *Transplant Proc* 27:2607, 1995
82. Ozaki CF, Katz SM, Monsour HP Jr. et al: Vascular reconstructions in living related liver transplantation. *Transplant Proc* 26:167, 1994
83. Lerut J, Tzakis AG, Bron KM, et al: Complications of venous reconstruction in human orthotopic liver transplantation. *Ann Surg* 205:404, 1987
84. Tung BY, Kimmey MB: Biliary complications of orthotopic liver transplantation. *Dig Dis* 17:133, 1999
85. Colonna JO II, Shaked A, Gomes AS, et al: Biliary strictures complicating liver transplantation : incidence, pathogenesis, management and outcome. *Ann. Surg* 216:536, 1992
86. Wang ZF, Liu C: Liver retransplantation: indications and outcomes. *Hepatobiliary Pancreat Dis Int* 3:175, 2004
87. Maring JK, Klompmaker IJ, Zwaveling JH, et al: Poor initial graft function after orthotopic liver transplantation: can it be predicted and does it affect outcome? A analysis of 125 adult primary transplantations. *Clin Transplant* 11:373, 1997.
88. Kamath GS, Plevak DJ, Wiesner RH, et al: Primary non-function of the liver graft: when should we transplant? *Transplant Proc* 23:1954, 1991.