



Bölüm 16

Mezotelyoma

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Epidemiyoloji, Risk faktörleri:

Mezotelyoma, plevral ve peritoneal boşlukların mezotelyal yüzeylerinden, tunika vaginalis veya perikarddan kaynaklanan bir neoplazm olup vakaların yüzde sekseni plevral kaynaklıdır. Amerika Birleşik Devletleri'nde yıllık mezotelyoma insidansının yılda yaklaşık 3300 vaka olduğu tahmin edilmektedir.¹ Başlıca nedeni asbeste inhalasyon yoluyla maruz kalma olup, malign plevral mezotelyoma (MPM) vakalarının yaklaşık %70'i kanıtlanmış asbest maruziyeti ile ilişkilidir. Asbest, endüstride ısıya ve yanmaya karşı direnci nedeniyle değerlidir. Çimento, tavan ve havuz fayanslarında, otomobil fren balatalarında ve gemi yapımında kullanılır. Mesleki maruziyete ek olarak, doğal kaynaklardan asbeste çevresel maruziyet mezotelyoma oluşumuna katkıda bulunabilir. Türkiye'de bazı kırsal bölgelerde toprak oldukça yüksek seviyelerde tremolit asbest lifleri içerir ve bu bölgelerde yaşayanlarda MPM görülme olasılığı oldukça yüksektir.²⁻⁴ Özellikle Kapadokya bölgesinde eriyonit gibi fibröz silikatların solunması da MPM gelişimi için oldukça yüksek bir risk faktörüdür.⁵ Bunun

dışında radyasyon maruziyeti, viral onkogenler (Simian virus 40), genetik faktörler de etyolojide rol oynamaktadır.

a. Evreleme: Evrelemede TNM evreleme sistemi (AJCCv.8) kullanılmaktadır (**Tablo-1**)

Tanı (histopatoloji) / Ayırıcı tanı / gerekli tetkikler / diğer tedavi seçenekleri

Histopatoloji/Ayırıcı tanı: MPM üç histolojik alt tipi vardır: epiteloïd, sarkomatoïd veya bifazik (karışık). En sık epiteloïd tip görülür (%60). Ayırıcı tanıda benign inflamatuvar hastalıklar (organizme ampiyem), sarkom, akciğer adenokanseri, ve solid tümörlerin plevral metastazları yer almaktadır. Immunohistokimyasal yöntemler ayırıcı tanıda yardımcı olur.

Gerekli tetkikler:

- Hikaye, fizik muayene, asbestos maruziyetinin sorgulanması, tam kan sayımı ve biyokimya
- Görüntüleme: Akciğer grafisi, IV kontrastlı

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Riskli Organlar:

- Spinal Kord: ≤ 45 Gy
- Akciğer: Ortalama Kontralateral akciğer dozu (MLD): 8.5 Gy; V20 \leq %7; V5 \leq %75
- P/D sonrası total akciğer ortalama dozu < 20 Gy, V20% $< 37\%$
- Kalp: D%50 $< 25-40$ Gy,
- Özefagus: ortalama < 34 Gy, 1/3 < 60 Gy; 2/3 < 55 Gy; 3/3 < 45 Gy
- Böbrekler: V18 Gy \leq %33
- Karaciğer: Ortalama ≤ 30 Gy

Takip ve yan etkiler

Takip: Standart öneriler olmamakla birlikte ilk 2 yıl 3 ayda bir, 2-5. yıllarda 6 ayda bir hikaye, fizik muayene ve görüntüleme (Toraks-abdomen BT) önerilebilir. Görüntüleme yöntemlerinin sıklığı hastaya uygulanan tedaviye ve hastanın semptomlarına göre değişebilir.

Yan etkiler:

Akut: Halsizlik, bulantı, kusma, disfaji, odinofaji, öksürük, dermatit, akut pnömonitis, pnömoni

Geç: Perikardit, restriktif kardiyomyopati, myokardiyal enfarkt, konjestif kalp yetmezliği, pulmoner fibrozis

Kaynaklar

1. Teta MJ, Mink PJ, Lau E, Scurman BK, Foster ED. US mesothelioma patterns 1973-2002: indicators of change and insights into background rates. *European journal of cancer prevention : the official journal of the European Cancer Prevention Organisation (ECP)* 2008;17:525-34.
2. Metintas M, Ozdemir N, Hillerdal G, et al. Environmental asbestos exposure and malignant pleural mesothelioma. *Respiratory medicine* 1999;93:349-55.
3. Senyigit A, Bayram H, Babayigit C, et al. Malignant pleural mesothelioma caused by environmental exposure to asbestos in the Southeast of Turkey: CT findings in 117 patients. *Respiration; international review of thoracic diseases* 2000;67:615-22.
4. Metintas S, Metintas M, Ucgun I, Oner U. Malignant mesothelioma due to environmental exposure to asbestos: follow-up of a Turkish cohort living in a rural area. *Chest* 2002;122:2224-9.
5. Carbone M, Emri S, Dogan AU, et al. A mesothelioma epidemic in Cappadocia: scientific developments and unexpected social outcomes. *Nature reviews Cancer* 2007;7:147-54.
6. Flores RM, Pass HI, Seshan VE, et al. Extrapleural pneumonectomy versus pleurectomy/decortication in the surgical management of malignant pleural mesothelioma: results in 663 patients. *J Thorac Cardiovasc Surg* 2008;135:620-6, 6.e1-3.
7. Lang-Lazdunski L, Bille A, Lal R, et al. Pleurectomy/decortication is superior to extrapleural pneumonectomy in the multimodality management of patients with malignant pleural mesothelioma. *Journal of thoracic oncology : official publication of the International Association for the Study of Lung Cancer* 2012;7:737-43.
8. Rena O, Casadio C. Extrapleural pneumonectomy for early stage malignant pleural mesothelioma: a harmful procedure. *Lung cancer (Amsterdam, Netherlands)* 2012;77:151-5.
9. Burt BM, Cameron RB, Mollberg NM, et al. Malignant pleural mesothelioma and the Society of Thoracic Surgeons Database: an analysis of surgical morbidity and mortality. *J Thorac Cardiovasc Surg* 2014;148:30-5.
10. Bovolato P, Casadio C, Billè A, et al. Does surgery improve survival of patients with malignant pleural mesothelioma?: a multicenter retrospective analysis of 1365 consecutive patients. *Journal of thoracic oncology : official publication of the International Association for the Study of Lung Cancer* 2014;9:390-6.
11. Vogelzang NJ, Rusthoven JJ, Symanowski J, et al. Phase III study of pemetrexed in combination with cisplatin versus cisplatin alone in patients with malignant pleural mesothelioma. *J Clin Oncol* 2003;21:2636-44.
12. Gomez DR, Rimner A, Simone CB, 2nd, et al. The Use of Radiation Therapy for the Treatment of Malignant Pleural Mesothelioma: Expert Opinion from the National Cancer Institute Thoracic Malignancy Steering Committee, International Association for the Study of Lung Cancer, and Mesothelioma Applied Research Foundation. *Journal of thoracic oncology : official publication of the International Association for the*

- Study of Lung Cancer 2019;14:1172-83.
13. Yajnik S, Rosenzweig KE, Mychalczak B, et al. Hemithoracic radiation after extrapleural pneumonectomy for malignant pleural mesothelioma. *International journal of radiation oncology, biology, physics* 2003;56:1319-26.
 14. Krug LM, Pass HI, Rusch VW, et al. Multicenter phase II trial of neoadjuvant pemetrexed plus cisplatin followed by extrapleural pneumonectomy and radiation for malignant pleural mesothelioma. *Journal of clinical oncology : official journal of the American Society of Clinical Oncology* 2009;27:3007-13.
 15. Flores RM, Krug LM, Rosenzweig KE, et al. Induction chemotherapy, extrapleural pneumonectomy, and postoperative high-dose radiotherapy for locally advanced malignant pleural mesothelioma: a phase II trial. *Journal of thoracic oncology : official publication of the International Association for the Study of Lung Cancer* 2006;1:289-95.
 16. Batirel HF, Metintas M, Caglar HB, et al. Trimodality treatment of malignant pleural mesothelioma. *Journal of thoracic oncology : official publication of the International Association for the Study of Lung Cancer* 2008;3:499-504.
 17. Rusch VW, Rosenzweig K, Venkatraman E, et al. A phase II trial of surgical resection and adjuvant high-dose hemithoracic radiation for malignant pleural mesothelioma. *The Journal of thoracic and cardiovascular surgery* 2001;122:788-95.
 18. Krayenbuehl J, Oertel S, Davis JB, Ciernik IF. Combined photon and electron three-dimensional conformal versus intensity-modulated radiotherapy with integrated boost for adjuvant treatment of malignant pleural mesothelioma after pleuropneumectomy. *International journal of radiation oncology, biology, physics* 2007;69:1593-9.
 19. Rice DC, Smythe WR, Liao Z, et al. Dose-dependent pulmonary toxicity after postoperative intensity-modulated radiotherapy for malignant pleural mesothelioma. *International journal of radiation oncology, biology, physics* 2007;69:350-7.
 20. Rice DC, Stevens CW, Correa AM, et al. Outcomes after extrapleural pneumonectomy and intensity-modulated radiation therapy for malignant pleural mesothelioma. *The Annals of thoracic surgery* 2007;84:1685-92; discussion 92-3.
 21. Tonoli S, Vitali P, Scotti V, et al. Adjuvant radiotherapy after extrapleural pneumonectomy for mesothelioma. Prospective analysis of a multi-institutional series. *Radiotherapy and oncology : journal of the European Society for Therapeutic Radiology and Oncology* 2011;101:311-5.
 22. Patel PR, Yoo S, Broadwater G, et al. Effect of increasing experience on dosimetric and clinical outcomes in the management of malignant pleural mesothelioma with intensity-modulated radiation therapy. *International journal of radiation oncology, biology, physics* 2012;83:362-8.
 23. Gupta V, Mychalczak B, Krug L, et al. Hemithoracic radiation therapy after pleurectomy/decortication for malignant pleural mesothelioma. *International journal of radiation oncology, biology, physics* 2005;63:1045-52.
 24. Rosenzweig KE, Zauderer MG, Laser B, et al. Pleural intensity-modulated radiotherapy for malignant pleural mesothelioma. *International journal of radiation oncology, biology, physics* 2012;83:1278-83.
 25. Rimner A, Spratt DE, Zauderer MG, et al. Failure patterns after hemithoracic pleural intensity modulated radiation therapy for malignant pleural mesothelioma. *International journal of radiation oncology, biology, physics* 2014;90:394-401.
 26. Rimner A, Zauderer MG, Gomez DR, et al. Phase II Study of Hemithoracic Intensity-Modulated Pleural Radiation Therapy (IMPRINT) As Part of Lung-Sparing Multimodality Therapy in Patients With Malignant Pleural Mesothelioma. *Journal of clinical oncology : official journal of the American Society of Clinical Oncology* 2016;34:2761-8.
 27. Trovo M, Relevant A, Polesel J, et al. Radical Hemithoracic Radiotherapy Versus Palliative Radiotherapy in Non-metastatic Malignant Pleural Mesothelioma: Results from a Phase 3 Randomized Clinical Trial. *International Journal of Radiation Oncology, Biology, Physics* 2021;109:1368-76.
 28. Kindler HL, Ismaila N, III SGA, et al. Treatment of Malignant Pleural Mesothelioma: American Society of Clinical Oncology Clinical Practice Guideline. *Journal of Clinical Oncology* 2018;36:1343-73.
 29. Boutin C, Rey F, Viallat JR. Prevention of malignant seeding after invasive diagnostic procedures in patients with pleural mesothelioma. A randomized trial of local radiotherapy. *Chest* 1995;108:754-8.
 30. O'Rourke N, Garcia JC, Paul J, Lawless C, McMenemy R, Hill J. A randomised controlled trial of intervention site radiotherapy in malignant pleural mesothelioma. *Radiotherapy and oncology : journal of the European Society for Therapeutic Radiology and Oncology* 2007;84:18-22.
 31. Bydder S, Phillips M, Joseph DJ, et al. A randomised

trial of single-dose radiotherapy to prevent procedure tract metastasis by malignant mesothelioma. *British journal of cancer* 2004;91:9-10.

32. Clive AO, Taylor H, Dobson L, et al. Prophylactic radiotherapy for the prevention of procedure-tract metastases after surgical and large-bore pleural procedures in malignant pleural mesothelioma (SMART): a multicentre, open-label, phase 3, randomised controlled trial. *The Lancet Oncology* 2016;17:1094-104.
33. Weder W, Kestenholz P, Taverna C, et al. Neoadjuvant chemotherapy followed by extrapleural pneumonectomy in malignant pleural mesothelioma. *Journal of clinical oncology : official journal of the American Society of Clinical Oncology* 2004;22:3451-7.
34. Hurmuz P, Akyol F, Selek U, et al. The Efficiency and Toxicity of Hemithoracic Radiotherapy After Extra Pleural Pneumonectomy in Malign Pleural Mesothelioma. *UHOD-2010;20(1):20-26*