19. BÖLÜM

BAKTERİYEL ARTRİTLER

Alper YILDIRIM[1]

Giriş

Son yıllarda genellikle tedaviye dirençli ve kalıcı doku hasarı yapan tüberküloz, brusella ve mantar enfeksiyonlarında bir artış görülmüştür. HIV enfeksiyonu, diyabet, yaşlılık, kortikosteroidler ve tümör nekroz faktörü (TNF) inhibitörleri gibi immünsüpresif tedavilerin kullanılması bu artıştan sorumludur. Bu bölümde tüberküloz, bruselloz ve Lyme hastalıklarına bağlı kas iskelet sistemi tutulumları anlatılacaktır.

Tüberküloz

Epidemiyoloji

Tüberküloz (TB) dünya çapında bir halk sağlığı tehdidi olmaya devam etmektedir. Sıtma, grip, kolera veya HIV dahil olmak üzere önde gelen bulaşıcı hastalıklar arasında başlıca ölüm nedenidir. Tüberküloz artriti en çok gelişmekte olan ülkelerde çocukları ve genç erişkinleri etkilemektedir. Gelişmekte olan ülkelerde, HIV salgını osteoartiküler TB koenfeksiyonunda belirgin artışlara neden olmuştur (1).

Patogenez

Primer *Mycobacterium (M.) tuberculosis* enfeksiyonu sırasında basiller, kemiklere veya sinovyal dokulara yerleşerek bir odak oluştururlar. Çoğu durumda, küçük enfeksiyon odakları lokal adaptif bağışıklık sistemiyle sınırlandırılır. Primer enfeksiyonu takiben, yeniden aktifleşen odaklar genellikle hücresel bağışıklık sistemini aktive eder ve CD4/CD8 lenfositler, interferon-gama burada önemli roller alır. Kötü beslenme, ilerleyen yaş, HIV enfeksiyonu veya ilerlemiş böbrek hastalığı gibi bağışıklık sisteminin zayıfladığı durumlarda hastalığın reaktivasyon olasılığı artar. Osteoartiküler TB, enfeksiyonun reaktivasyonu ile daha sık ilişkilidir ve esas olarak yetişkinlerde görülür. TB enfeksiyonu ile ilişkili iki tip kemik ve eklem tutulumu tanımlanmıştır: kazeöz eksüdatif tip ve granüler tip. Kazeöz eksüdatif tip kemik destrüksiyonu, lokal şişlik, apse oluşumu, sinüs oluşumu ve konstitüsyonel semptomlarla karakterizedir; en sık çocuklarda görülür. Granüler tip, kazeöz eksüdatif tipten daha sinsi ve daha az destrüktiftir ve apse oluşumu daha az yaygındır; en sık yetişkinlerde görülür (2).

Klinik

Kas-iskelet sistemi tutulumu tüm TB formlarının %1 ile %3'ünde görülür. Mikobakterilerin neden olduğu kas-iskelet sistemi enfeksiyonları tipik olarak kemiklerin, omurganın, periferik eklemlerin veya yumuşak dokuların kronik, ağrısız,

[1] Uzm. Dr., Uşak Üniversitesi Eğitim ve Araştırma Hastanesi Romatoloji Kliniği, alperyildirim1985@gmail.com

KAYNAKÇA

1. Shafer RW, Kim DS, Weiss JP, et al. Extrapulmonary tuberculosis in patients with human immunodeficiency virus infection. *Medicine (Baltimore)* 70(6):384–397, 1991.
2. Lenaerts A, Barry CE 3rd, Dartois V. Heterogeneity in tuberculosis pathology, microenvironments and therapeutic responses. Immunol Rev 2015; 264:288.
3. Marquez J, Espinoza L.(2019) Mycobacterial, brucellar, fungal and parasitic arthritis . Marc C. Hochberg (Eds.). *Rheumatology* (7th ed. pp. 943-947). Philadelphia : Elsevier
4. Chapman M, Murray RO, Stoker DJ. Tuberculosis of the bones and joints. *Semin Roentgenol* 14(4):266–282, 1979.
5. Cantini F, Salvarani C, Olivieri I, et al. Tuberculous spondylitis as a cause of inflammatory spinal pain: a report of 4 cases. *Clin Exp Rheumatol* 16(3):305–308, 1998.
6. Pouchot J, Vinceneux P, Barge J, et al. Tuberculosis of the sacroiliac joint: clinical features, outcome, and evaluation of closed needle biopsy in 11 consecutive cases. *Am J Med* 84(3 Pt 2):622–628, 1988.
7. Pande KC, Babhulkar SS. Atypical spinal tuberculosis. *Clin Orthop Relat Res* 398:67–74, 2002.
8. Babhulkar S, Pande S. Tuberculosis of the hip. *Clin Orthop Relat Res* 398:93–99, 2002.
9. Khater FJ, Samnani IQ, Mehta JB, et al. Prosthetic joint infection by Mycobacterium tuberculosis: an unusual case report with literatüre review. *South Med J* 100(1):66–69, 2007.
10. Wallace R, Cohen AS. Tuberculous arthritis. A report of two cases with review of biopsy and synovial fluid findings. *Am J Med* 61(2): 277–282, 1976.
11. Tsay MH, Chen MC, Jaung GY, et al. Atypical skeletal tuberculosis mimicking tumor metastases: report of a case. *J Formos Med Assoc* 94(7):428–431, 1995.
12. Babhulkar SS, Pande SK. Unusual manifestations of osteoarticular tuberculosis. *Clin Orthop Relat Res* 398:114–120, 2002.
13. Ruiz G, Garcia Rodriguez J, Guerri ML, et al. Osteoarticular tuberculosis in a general hospital during the last decade. *Clin Microbiol Infect* 9(9):919–923, 2003.
14. Cardoso S, Garcia C, Pinto LF, et al. Reactive arthritis reactive following Bacillo Calmet-Guerin Inmunotherapy. *Int J Clin Rheumatol*. 2014;9(5):409-414.
15. Dall L, Long L, Stanford J. Poncet's disease: tuberculous rheumatism. *Rev Infect Dis* 11(1):105–107, 1989.
16. Sanjuan-Jimenez R, Morata P, Bermudez P, et al. Comparative clinical study of different multiplex real time PCR strategies for the simultaneous differential diagnosis between extrapulmonary tuberculosis and focal complications of brucellosis. *PLoS Negl Trop Dis* 7(12):e2593, 2013.
17. Chan MP. Neutrophilic panniculitis. Algorithm Approach to a Heterogenous Group of Disorders. *Arch Pathol Lab Med*. 2014;138:1337-1343.
18. Boehme CC, Nicol MP, Nabeta P, et al. Feasibility, diagnostic accuracy, and effectiveness of decentralised use of the Xpert MTB/RIF test for diagnosis of tuberculosis and multidrug resistance: a multicentre implementation study. *Lancet* 377(9776):1495–1505, 2011.
19. Alvarez S, McCabe WR. Extrapulmonary tuberculosis revisited: a review of experience at Boston City and other hospitals. *Medicine (Baltimore)* 63(1):25–55, 1984.
20. Villegas MV, Labrada LA, Saravia NG. (2000). Evaluation of Polymerase Chain Reaction, Adenosine Deaminase, and Interferon-γ in Pleural Fluid for the Differential Diagnosis of Pleural Tuberculosis. *Chest, 118(5), 1355–1364.*
21. Moore SL, Rafii M. Imaging of musculoskeletal and spinal tuberculosis. *Radiol Clin North Am* 39(2):329–342, 2001.
22. Lifeso RM, Weaver P, Harder EH. Tuberculous spondylitis in adults. *J Bone Joint Surg Am* 67(9):1405–1413, 1985.
23. Masood S. Diagnosis of tuberculosis of bone and soft tissue by fineneedle aspiration biopsy. *Diagn Cytopathol* 8(5):451–455, 1992.
24. Getahun H, Matteelli A, Abubakar I, et al. Management of Latent *Mycobacterium tuberculosis* infection: WHO guidelines for low tuberculosis bourden countries. *Eur Respir J*. 2015;46:1563-1576.
25. American Thoracic Society, CDC, Infectious Diseases Society of America: Recommendations for the treatment of tuberculosis. *MMWR* 52:1–77, 2003.
26. Parsons LM, Driscoll JR, Taber HW, et al. Drug resistance in tuberculosis. *Infect Dis Clin North Am* 11(4):905–928, 1997.
27. Uhel F, Corvaisier G, Poinsinon Y, et al. Mycobacterium tuberculosis prosthetic joint infections: A case series and literature review. Volume 78, Issue 1, P27-34, 2019
28. Lai CC, Tan CK, Chou CH, et al. Increasing incidence of nontuberculous mycobacteria, Taiwan, 2000-2008. *Emerg Infect Dis* 16(2):294– 296, 2010.
29. Chan ED, Kong PM, Fennelly K, et al. Vertebral osteomyelitis due to infection with nontuberculous Mycobacterium species after blunt trauma to the

back: 3 examples of the principle of locus minoris resistentiae. *Clin Infect Dis* 32(10):1506–1510, 2001.
30. Lee KH, Heo ST, Choi SW, et al. Three cases of postoperative septic arthritis caused by Mycobacterium conceptionense in the shoulder joints of immunocompetent patients. *J Clin Microbiol* 52(3):1013–1015, 2014.
31. Sutker WL, Lankford LL, Tompsett R. Granulomatous synovitis: therole of atypical mycobacteria. *Rev Infect Dis* 1(5):729–735, 1979.
32. Mycobacterioses and the acquired immunodeficiency syndrome. Joint Position Paper of the American Thoracic Society and the Centers for Disease Control. *Am Rev Respir Dis* 136(2):492–496, 1987.
33. Turan H, Serefhanoglu K, Karadeli E, et al. A case of brucellosis with abscess of the iliacus muscle, olecranon bursitis, and sacroiliitis. *Int J Infect Dis* 13(6):e485–e487, 2009.
34. Galińska EM, Zagórski J. Brucellosis in humans–etiology, diagnostics, clinical forms. *Ann Agric Environ Med* 20(2):233–238, 2013.
35. Elkafi MG, Alaidan AA, Al-Hokail AA. Host response to*Brucella* infection: review and future perspective. *J Infect Dev Ctries*. 2015;9(7):697-701.
36. Ruoff CM, Kerwin SC, Taylor AR. Diagnostic Imaging of Discospondylitis. Vet Clin North Am Small Anim Pract. 2018 Jan;48(1):85-94
37. Bosilkoski M, Zezoski M, Siskova D, et al. Clinicalcharacteristic of human Brucellosis in variousmonoartricular involvement. *Clin Rheumatol*. 2016; feb.
38. Aktar F, Tekin R, Bektas MS, et al. Diagnostic role of inflammatory markers in pediatric Brusella arthritis. *It J Ped*. 2016;42:1-6.
39. Godfroid J, Cloeckaert A, Liautard JP, et al. From the discovery of the Malta fever's agent to the discovery of a marine mammal reservoir, brucellosis has continuously been a re-emerging zoonosis. Vet Res 2005; 36:313.
40. Pappas G, Akritidis N, Bosilkovski M, et al. Brucellosis. N Engl J Med 352:2325–2336, 2005.
41. Steere AC, Malawista SE, Snydman DR, et al. Lyme arthritis: an epidemic of oligoarticular arthritis in children and adults in three Connecticut communities. *Arthritis Rheum* 20(1):7–17, 1977.
42. Weber K, Pfister HW. History of Lyme borreliosis in Europe. In Weber K, Burgdorfer W, editors: *Aspects of Lyme borreliosis*, Berlin, 1993, Springer-Verlag, pp 1–20.
43. Mead PS. Epidemiology of Lyme disease. *Infect Dis Clin North Am*. 2015;29:187-210.
44. Piesman J, Gern L. Lyme borreliosis in Europe and North America. *Parasitology* 129 (Suppl):S191–S220, 2004.
45. Kraiczy P, Hellwage J, Skerka C, et al. Complement resistance of *Borrelia burgdorferi* correlates with the expression of BbCRASP-1, a novel linear plasmid-encoded surface protein that interacts with human factor H and FHL-1 and is unrelated to Erp proteins. *J Bio Chem*. 2004;279:2421-2429.
46. Steere AC, Coburn J, Glickstein L. The emergence of Lyme disease. *J Clin Invest*. 2004;113:1093-1101.
47. Steere AC, Dhar A, Hernandez J, et al. Systemic symptoms without erythema migrans as the presenting picture of early Lyme disease. *Am J Med* 114(1):58–62, 2003.
48. Steere AC, Sikand VK. The presenting manifestations of Lyme disease and the outcomes of treatment. *N Engl J Med*. 2003;348:2472-2474.
49. Edlow JA. Erythema migrans. *Med Clin North Am* 86(2):239–260, 2002.
50. Forrester JD, Meiman J, Mullins J, et al. Notes from the field: update on Lyme carditis, groups at high risk, and frequency of associated sudden cardiac death—United States. *MMWR Morb Mortal Wkly Rep* 63(43):982–983, 2014.
51. Halperin JJ. Neurologic manifestations of Lyme disease. *Curr Infect Dis Rep* 13(4):360–366, 2011.
52. Halperin JJ. Nervous system Lyme disease. *Infect Dis Clin North Am* 22(2):261–274, 2008.
53. Halperin JJ. Lyme disease and the peripheral nervous system. *Muscle Nerve* 28(2):133–143, 2003.
54. Steere AC, Glickstein L. Elucidation of Lyme arthritis. *Nat Rev Immunol*. 2004;4:143-152.
55. Linda K. Bockenstedt (2017), Lyme Disease, Gary S. Fırestein (Eds.), *Kelley And Fırestein's Textbook Of Rheumatology*, (10th ed.pp.1891-1902) Philadelphia : Elsevier
56. Halperin JJ. Central nervous system Lyme disease. *Curr Neurol Neurosci Rep* 5(6):446–452, 2005.
57. Mullegger RR, Glatz M. Skin manifestations of Lyme borreliosis: diagnosis and management. *Am J Clin Dermatol* 9(6):355–368, 2008.
58. Johnson BJ, Pilgard MA, Russell TM. Assessment of new culture method for detection of *Borrelia* species from serum of Lyme disease patients. *J Clin Microbiol* 52(3):721–724, 2014.
59. Wilske B, Schierz G, Preac-Mursic V, et al. Intrathecal production of specific antibodies against *Borrelia burgdorferi* in patients with lymphocytic meningoradiculitis (Bannwarth's syndrome). *J Infect Dis* 153(2):304–314, 1986.
60. Centers for Disease Control and Prevention: Notice to readers: caution regarding testing for Lyme disease. *MMWR Morb Mortal Wkly Rep* 54(05):125, 2005.
61. Lawson JP, Steere AC. Lyme arthritis: radiologic findings. *Radiology* 154(1):37–43, 1985.

62. Agarwal R, Sze G. Neuro-Lyme disease: MR imaging findings. *Radiology* 253(1):167–173, 2009.
63. Williams CL, Stobino B, Weinstein A, et al. Maternal Lyme disease and congenital malformations: a cord blood serosurvey in endemic and control areas. *Paediatr Perinatal Epidemiol*. 1995;9:320-330
64. Wormser GP, Dattwyler RJ, Shapiro ED, et al. The clinical assessment, treatment, and prevention of Lyme disease, human granulocytic anaplasmosis, and babesiosis: clinical practice guidelines by the Infectious Diseases Society of America. *Clin Infect Dis*. 2006;43:1089-1134.
65. Arvikar SL, Steere AC. Diagnosis and treatment of Lyme arthritis. *Infect Dis Clinic North Am*. 2015;29:269-280.
66. Steere AC, Angelis SM. Therapy for Lyme arthritis; strategies for the treatment of antibiotic-refractory arthritis. *Arthritis Rheum*. 2006;54:3079-3085.