

References

- 1-Altman D (2005):** Evaluating the evidence for multiple sclerosis as an autoimmune disease. *Arch. Neurol*; 62 (4): 688.
- 2-Amit M. Saindane, Soonmee Cha, Meng Law, Xiaonan Xue, Edmond A. Knopp, and David Zagzag (2002):** Proton MR Spectroscopy of Tumefactive Demyelinating Lesions *AJNR Am J Neuroradiol* 23:1378–1386.
- 3-Anderson DW, Ellenberg JH, Leventhal CM (1992):** Revised estimate of the prevalence of multiple sclerosis in the United States. *Ann Neurol*; 31(3): 333-6
- 4-Anderson JS (2006):** MR in multiple sclerosis. *RSNA*. July 06.
- 5-Antony JM, Ellestad KK, Hammond R (2007):** The human endogenous retrovirus envelope glycoprotein, syncytin-1, regulates neuroinflammation and its receptor expression in multiple sclerosis: a role for endoplasmic reticulum chaperones in astrocytes. *J. Immunol*; 179 (2): 1210–24.
- 6-Arnold DL, de Stefano N, Matthews PM, Trapp BD (2001):** N-acetylaspartate: usefulness as an indicator of viable neuronal tissue. *Ann Neurol*; 50:823-825.
- 7-Bakshi R (2004):** Neuroimaging of HIV and AIDS related illnesses: a review. *Front Biosci*; 9:632-646.
- 8-Bakshi R, Ariyaratana S, Benedict RH, Jacobs L (2001):** Fluid-attenuated inversion recovery magnetic resonance imaging detects cortical and juxtacortical multiple sclerosis lesions. *Arch Neurol*; 58:742-748.

9-Bakshi R, Caruthers SD, Janardhan V, Wasay M (2000):

Intraventricular CSF pulsation artifact on fast fluid-attenuated inversion-recovery MR images: analysis of 100 consecutive normal studies. *AJNR Am J Neuroradiol*; 21:503-508.

10-Bakshi R, Hutton GJ, Miller JR, Radue EW (2005): The use of magnetic resonance imaging in the diagnosis and long-term management of multiple sclerosis. *Neurology*; 63(Suppl 5):S3–S11.

11-Bakshi R, Miletich RS, Kinkel PR, Emmet ML, Kinkel WR (1998): Highresolution fluorodeoxyglucose positron emission tomography shows both global and regional cerebral hypometabolism in multiple sclerosis. *J Neuroimaging*; 8:228 –234.

12-Bakshi R, Minagar A, Jaisani Z, Wolinsky JS (2005): Imaging of multiple sclerosis:role in neurotherapeutics. *NeuroRx*; 2:277–303.

13-Bakshi R, Thompson J, Rocca M, Pelletier D, Dousset V, Barkhof F, Inglese M, Guttman R, Horsfield M , Filippi M.(2008) . MRI in multiple sclerosis. Current status and future prospects . *Lancet Neurol* ;7: 615–625.

14-Barkhof F (1999): MRI in multiple sclerosis: correlation with expanded disability status scale (EDSS). *Mult Scler*; 5:283-286.

15-Barkhof F, Filippi M, Miller DH (1997): Comparison of MRI criteria at first presentation to predict conversion to clinically definite multiple sclerosis. *Brain*; 120:2059–69.

16-Barkhof F, Rocca M, Francis G, et al (2003): Early Treatment of Multiple Sclerosis Study Group; Validation of diagnostic magnetic resonance imaging criteria for multiple sclerosis and response to interferon beta1a. *Ann Neurol*; 53:718-724.

17-Basser PJ (1997): New histological and physiological stains derived from diffusion- tensor MR images. *Ann NY Acad Sci*; 820:123–138.

18-Belman AL, Coyle PK, Roque C, Cantos E (1992): MRI findings in children infected by *Borrelia burgdorferi*. *Pediatr Neurol*; 8:428-431.

19-Bennetto L, Scolding N (2004): Inflammatory/post-infectious encephalomyelitis. *J Neurol Neurosurg Psychiatry*; 75(suppl1):i22-8.

20-Bermel RA, Bakshi R, Tjoa C, Puli SR, Jacobs L (2002): Bicaudate ratio as a magnetic resonance imaging marker of brain atrophy in multiple sclerosis. *Arch Neurol*; 59:275-280.

21-Bermel RA, Innus MD, Tjoa CW, Bakshi R (2003): Selective caudate atrophy in multiple sclerosis: a 3D MRI parcellation study. *Neuroreport*; 14:335-339.

22-Bermel RA, Puli SR, Rudick RA (2005): Prediction of longitudinal brain atrophy in multiple sclerosis by gray matter magnetic resonance imaging T2 hypointensity. *Arch Neurol*; 62:1371-1376.

23-Bermel RA, Sharma J, Tjoa CW, Puli SR, Bakshi R (2003): A semiautomated measure of whole-brain atrophy in multiple sclerosis. *J Neurol Sci*; 208:57-65.

24-Berry I, Barker JG, Barkhof F (1999): A multicenter measurement of magnetization transfer ratio in normal white matter. *J Magn Reson Imaging*; 9: 441-446.

25-Bitsch A, Kuhlmann T, Stadelmann C (2001): A longitudinal MRI study of histopathologically defined hypointense multiple sclerosis lesions. *Ann Neurol*; 49:793–796.

26-Blinkenberg M, Rune K, Jensen CV, Ravnborg M, Kyllingsbaek S, Holm S (2000): Cortical cerebral metabolism correlates with MRI lesion load and cognitive dysfunction in MS. *Neurology*; 54:558 –564.

27-Bonneville F, Moriarty DM, Li BS, Babb JS, Grossman RI, Gonen O (2002): Whole-brain N-acetylaspartate concentration: correlation with T2-weighted lesion volume and expanded disability status scale score in cases of relapsing-remitting multiple sclerosis. *AJNR Am J Neuroradiol*; 233:371–375.

28-Brex PA, Ciccarelli O, O’Riordan JI, Sailer M, Thompson AJ, Miller DH (2002): A longitudinal study of abnormalities on MRI and disability from multiple sclerosis. *N Engl J Med*; 346(3): 158-164.

29-Brinar v (2002): The differential diagnosis of multiple sclerosis. *clinical neurology& neurosurgery*;104 (3):211-220.

30-Brooks DJ (2005): Positron emission tomography and single-photon emission computed tomography in central nervous system drug development. *NeuroRx*; 2:226 –236.

31-Brown RF, Tennant CC, Sharrock M, Hodgkinson S, Dunn SM, Pollard JD (2006): Relationship between stress and relapse in multiple sclerosis: Part II. Direct and indirect relationships. *Mult. Scler*; 12 (4): 465–75.

32-Bruck W, Bitsch A, Kolenda H, Bruck Y, Stiefel M, Lassmann H (1997): Inflammatory central nervous system demyelination: correlation of magnetic resonance imaging findings with lesion pathology. *Ann Neurol*; 42:783-793.

33-Buhring U, Herrlinger U, Krings T, Thiex R, Weller M, Kuker W (2001): MRI features of primary central nervous system lymphomas at presentation. *Neurology*; 57:393-396.

34-Burtscher IM., Holtas S. (2001): Proton magnetic resonance spectroscopy in brain tumours: clinical applications. *Neuroradiology*; 43(5):345-352.

35-Calabrese LH (1995): Vasculitis of the central nervous system. *Rheum Dis Clin North Am*; 21:1059-1076.

36-Carvallo J, Barragan-Campos H, Padilla-Aranda H, Alonso-Juarez M, Estanol B, Cantu-Brito C, Garcia-Ramos G (2009): Posterior reversible encephalopathy syndrome as complication of acute lupus activity. *Clinical neurology & neurosurgery*; 111(4):359-363

37-Casaccia-Bonnet, P.G. Pandozey and F. Mastronardi (2008) : Evaluating epigenetic landmarks in the brain of multiple sclerosis patients : A contribution to the current debate on disease pathogenesis. *Prog. Neurobiol.*, 86:368-378

38-Chabriat H, Levy C, Taillia H (1998) : Patterns of MRI lesions in CADASIL. *Neurology*; 51:452-457.

39-Chabriat H,Joutel A,Dichgans M,Tournier-Lasserre E,Bousser M(2009): CADASIL,The Lancet Neurology; 8(7): 643-653.

40-Chang KH, Song IC, Kim SH (2006): In vivo single voxel proton MR spectroscopy in intracranial cystic masses. AJNR Am J Neuroradiol; 19:401-405.

41-CHARIL A and FLIPPI M(2007) : Inflammatory Demyelination And Neurodegeneration In Early Multiple Sclerosis, J neurological sciences ;259: (1-2):7-15.

42-Chaudhuri A, Behan P (2004): Multiple sclerosis is not an autoimmune disease. Arch. Neurol; 61 (10): 1610–2.

43-Christensen T (June 2007): Human herpesviruses in MS. Int MSJ; 14 (2): 41–7.

44-Ciccarelli O, Toosy AT, Hickman SJ, et al (2005): Optic radiation changes after optic neuritis detected by tractography-based group mapping. Hum Brain Mapp; 25:308-316.

45-Ciccarelli O, Werring DJ, Wheeler-Kingshott CA,Barker GJ, Parker GJ, Thompson AJ, Miller DH (2001): Investigationn of MS normalappearing brain using diffusion tensor MRI with clinically early relapsing remitting multiple sclerosis. Brain; 125: 2342-2352.

46-Cifelli A, Arridge M, Jeppard P, Esiri MM, Palace J, Matthews PM (2002): Thalamic neurodegeneration in multiple sclerosis. Ann Neurol; 52:650.

- 47-Collins DL, Montagnat J, Zijdenbos AP, Evans AC, Arnold DL (2001):** Automated estimation of brain volume in multiple sclerosis with BICCR. *Lect Notes Comput Sci*; 141:147.
- 48-Confavreux C (2002):** Infections and the risk of relapse in multiple sclerosis. *Brain*; 125 (5): 933–4.
- 49-Coombs BD, Best A, Brown MS, et al (2004):** Multiple sclerosis pathology in the normal and abnormal appearing white matter of the corpus callosum by diffusion tensor imaging. *Mult Scler*; 10:392-397.
- 50-Crossman AR (2005):** *Neuroanatomy*, first edition; 13:134-150. Elsevier Churchill Livingstone.
- 51-Crossman AR, Neary D (2000):** Cerebral hemispheres and cerebral cortex. In textbook of: *Neuroanatomy* 2nd edition; (13):134-149. Churchill Livingstone. UK.
- 52- Da Cruze LC, Batista R, Dominques R, Barkhof F (2011):** Diffusion Magnetic Resonance Imaging in Multiple Sclerosis. *Neuroimaging Clinics*; 21(1):71-88.
- 53-Dagher AP, Smiriniotopoulos J (1996):** Tumefactive demyelinating lesions. *Neuroradiology*; 38:560–5.
- 54-Dalton CM, Chard DT, Davies GR (2004):** Early development of multiple sclerosis is associated with progressive grey matter atrophy in patients presenting with clinically isolated syndromes. *Brain*; 127:1101-1107.
- 55-Dalton CM, Miszkiel KA, Brex PA (2003):** New T2 lesions enable an earlier diagnosis of multiple sclerosis in clinically isolated syndromes. *Ann Neurol.*; 53:673–676.

- 56-Davie CA, Barker GJ, Webb S (1995):** Persistent functional deficit in multiple sclerosis and autosomal dominant cerebellar ataxia is associated with axon loss. *Brain*; 118:1583–1592.
- 57-Davie CA, Hawkins CP, Barker GJ (1994):** Serial proton magnetic resonance spectroscopy in acute multiple sclerosis lesions. *Brain*; 117:49 – 58.
- 58-De Coene B, Hajnal JV, Gatehouse P, Longmore DB, White SJ, Oatridge A, Pennock JM, Young IR, Bydder GM (1992):** MR of the brain using fluid attenuated inversion recovery (FLAIR) pulse sequences. *AJNR Am J Neuroradiol*; 13(6): 1555-1564.
- 59-De Seze J, Zephir H, Hautecoeur P, Mackowiak A, Cabaret M, Vermersch P (2006):** Pathologic laughing and intractable hiccups can occur early in multiple sclerosis. *Neurology*; 67 (9): 1684–6.
- 60-De Stefano N, Filippi M (2007):** MR spectroscopy in multiple sclerosis. *J Neuroimaging*; 17:31S–35S.
- 61-De Stefano N, Matthews PM, Antel JP (1995):** Chemical pathology of acute demyelinating lesions and its correlation with disability. *Ann Neurol*; 38:901–909.
- 62-De Stefano N, Matthews PM, Fu L (1998):** Axonal damage correlates with disability in patients with relapsing-remitting multiple sclerosis. Results of a longitudinal magnetic resonance spectroscopy study. *Brain*; 121:1469 – 1477.
- 63-De Stefano N, Narayanan S, Francis GS (2001):** Evidence of axonal damage in the early stages of multiple sclerosis and its relevance to disability. *Arch Neurol*; 58:65–70.

64-Enzinger C, Ropele S, Smith S (2004): Accelerated evolution of brain atrophy and "black holes" in MS patients with APOE-epsilon 4. *Ann Neurol*; 55:563-569.

65-Fernando KT, McLean MA, Chard DT (2004): Elevated white matter myo-inositol in clinically isolated syndromes suggestive of multiple sclerosis. *Brain*; 127:1361–1369.

66-Filippi M, Bozzali M, Rovaris M (2003): Evidence for widespread axonal damage at the earliest clinical stage of multiple sclerosis. *Brain*; 126(Pt 2):433–437.

67-Filippi M, Iannucci G, Cercignani M, Assunta Rocca M, Pratesi A, Comi G. (2000): A quantitative study of water diffusion in multiple sclerosis lesions and normal-appearing white matter using echo-planar imaging. *Arch Neurol*; 57(7):1017-1021.

68- M, Rocca MA, Martino G, Horsfield MA, Comi G (1998): Magnetization transfer changes in the normal appearing white matter precede the appearance of enhancing lesions in patients with multiple sclerosis. *Ann Neurol*; 43:809-814.

69-Filippi M, Rovaris M, Comi G. (2003). *New Frontiers of MR Based Techniques in Multiple Sclerosis*. Springer Verlag . Berlin, pp. 1–3.

70-Filippi M, Tortorella C, Rovaris M (2002): Magnetic resonance imaging of multiple sclerosis. *J Neuroimaging*; 12(4):289-301.

71-Filippi M, Yousry TA, Alkadhi H, Stehling M, Horsfield MA, Voltz R (1996): Spinal cord MRI in multiple sclerosis with multicoil arrays: a comparison between fast spin echo and fast FLAIR. J Neurol Neurosurg Psychiatry; 61(6):632-635

72-Fisher E, Rudick RA, Simon JH (2002): Eight-year follow-up study of brain atrophy in patients with MS. Neurology; 59:1412-1420.

73-Fitzgerland MJT, Curran JF (2002): Cerebral topography. In textbook of: Neuroanatomy and related neurosciences 5th edition; (2):13-15.WB Saunders. Spain.

74-Flippi m. and Agosta F. (2009): Magnetic resonance techniques to quantify tissue damage, tissue repair and functional cortical reorganization in multiple sclerosis .Prog.Brain Res.,175:465-482.

75-Franklin GM, Nelson L (2003): Environmental risk factors in multiple sclerosis: causes, triggers, and patient autonomy. Neurology; 61 (8): 1032–4.

76-Frohman EM, Goodin DS, Calabresi PA, Corboy JR, Coyle PK, Filippi M, Frank JA, Galetta SL, Grossman RI, Hawker K, Kachuck NJ, Levin MC, Phillips JT, Racke MK, Rivera VM, Stuart WH (2003): The utility of MRI in suspected MS: report of the Therapeutics and Technology Assessment Subcommittee of the American Academy of Neurology. Neurology; 61(5):602-611.

77-Fu L, Matthews PM, De Stefano N, et al (1998): Imaging axonal damage of normal appearing white matter in multiple sclerosis. Brain; 21:103–113.

- 78-Garcia-Monco JC, Miro Jornet J, Fernandez Villar B, Benach JL, Guerrero Espejo A, Berciano JA (1990):** Multiple sclerosis or Lyme disease? A diagnosis problem of exclusion. *Med Clin (Barc)*; 94(18):685-8.
- 79-Ge Y (2006):** Multiple sclerosis: the role of MR imaging. *AJNR Am J Neuroradiol*; 27:1165-1176.
- 80-Geurts JJ, Bo L, Pouwels PJ, Castelijns JA, Polman CH, Barkhof F (2005):** Cortical lesions in multiple sclerosis: combined postmortem MR imaging and histopathology. *AJNR Am J Neuroradiol*; 26:572-577.
- 81-Giovannoni G, Bever CT (2003):** Patients with clinically isolated syndromes suggestive of MS Does MRI allow earlier diagnosis? *Neurology*; 60:6–7.
- 82-Giulietti G,Bozzali M,Figura V,Spano B, Perri R,Marra C,Lacidogna G,Giubilei F,Caltagirone C,Cercignani M(2012):** Quantitative magnetization transfer provides information complementary to grey matter atrophy in Alzheimer's disease brains. *NeuroImage* ;59 : 1114–1122
- 83-Gonen O, Filippi M, Comi G, Grossman R (2003):** Global brain proton spectroscopy in MS. In: *New Frontiers of MR-Based Techniques in Multiple Sclerosis*. Springer Verlag, Berlin; pp. 47–71.
- 84-Gonen O, Oberndorfer TA, Inglese M, Babb JS, Herbert J, Grossman R (2007):** Reproducibility of three whole-brain N-acetylaspartate decline cohorts in relapsing-remitting multiple sclerosis. *AJNR Am J Neuroradiol*; 28:267–271.
- 85-Gonzalez-Toledo E., Kelly RE.,Minagar A. (2006):** Role of magnetic resonance spectroscopy in diagnosis and management of multiple sclerosis. *Neurol Res*; 28(3):280-283.

86-Gray H. (1989): Internal structure of cerebral hemisphere. In: textbook of Gray's Anatomy 37th edition ;(7): 1071-1073. Churchill Livingstone UK.

87-Gronseth GS, Ashman EJ (2000): Practice parameter; the usefulness of evoked potentials in identifying clinically silent lesions in patients with suspected multiple sclerosis (an evidence-based review): Report of the Quality Standards Subcommittee of the American Academy of Neurology. Neurology; 54(9):1720–5.

88-Grossman R, Gomori JM, Ramer KN, Lexa FJ, schnall MD (1994): Magnetization transfer: theory and clinical applications in Neuroradiology. Radiographics; 14: 279-290.

89-Gujar S.K., Maheshwari S., Bjorkman-Burtscher I., Sundgren P.C. (2005): Magnetic resonance spectroscopy. J Neuroophthalmol; 25(3):217-226.

90-Guye M, Parker GJM, Symms M, Boulby P, Wheeler-Kingshott CAM, Salek-Haddadi A, Baker GJ, and Duncana JS (2003): Combined functional MRI and tractography to determine the connectivity of the human primary motor cortex in vivo. NeuroImage; 19:1349-1360.

91-Hasan KM, Gupta RK, Santos RM, Wolinsky JS, Narayana PA (2005): Diffusion tensor fractional anisotropy of the normal-appearing seven segments of the corpus callosum in healthy adults and relapsing-remitting multiple sclerosis patients. J Magn Reson Imaging; 21:735-743

92-Horsfield MA (2005): Magnetization transfer imaging in multiple sclerosis. J Neuroimaging; 15:58S-67S.

- 93-Husted CA, Goodin DS, Hugg JW (1994):** Biochemical alterations in multiple sclerosis lesions and normal-appearing white matter detected by in vivo 31P and 1H spectroscopic imaging. *Ann Neurol*; 36:157–165.
- 94-Jonasson L, Bresson X, Hagmann P, Cuisenaire O, Meuli R, and Thiran JP (2005):** White matter fiber tract segmentation in DT-MRI using geometric flows. *Medical Image Anal.*
- 95-Jones CK, Riddehough A, Li DKB (2001):** MRI cerebral atrophy in relapsing-remitting MS: results from the PRISMS trial. *Neurology*; 56(suppl3):A379.
- 96-Jongen P (2006):** Psychiatric onset of multiple sclerosis. *J Neurol Sci*; 245 (1–2): 59–62.
- 97-Jonson G, Ge Y, Low M. (2004).**Preferential occult injury of corpus callosum in multiple sclerosis measured by diffusion tensor imaging .*J Magn Reson imaging*;20:1-7.
- 98-Karaarslan E, Altintas A, Senol U, Yeni N, Dincer A, Bayindir C, Karaagac N, Siva A (2001):** Balo’s concentric sclerosis: clinical and radiologic features of five cases. *AJNR Am J Neuroradiol*; 22:1362–1367.
- 99-Karussis D, Weiner HL, Abramsky O (1999):** Multiple sclerosis vs lyme disease: a case presentation to a discussant and a review of the literature. *Mult Scler*; 5:395-402.
- 100-Kita M, Goodkin DE, Bacchetti P, Waubant E, Nelson SJ, Majumdar S (2000):** Magnetization transfer ratio in new MS lesions before and during therapy with IFNbeta-1a. *Neurology*; 54:1741-1745.

101-Kurtzke JF (1983): Rating neurologic impairment in multiple sclerosis: an expanded disability status scale (EDSS). *Neurology*; 33 (11): 1444–52

102-Le Bihan D., Mangin J.F., Poupon C., Clark C.A., Pappata S., Molko N., Chabriat H. (2001): Diffusion tensor imaging: concepts and applications. *J Magn Reson Imaging*; 13(4):534-546.

103-Lee BCP (1993): Magnetic resonance imaging of metabolic and primary white matter disorder in children. *Neuroimaging Clin N Am*; 3:267-269.

104-Levin LI, Munger KL, Rubertone MV (2005): Temporal relationship between elevation of epstein-barr virus antibody titers and initial onset of neurological symptoms in multiple sclerosis. *JAMA*; 293 (20): 2496-500.

105-Li J, Johansen C, Bronnum-Hansen H, Stenager E, Koch-Henriksen N, Olsen J (2004): The risk of multiple sclerosis in bereaved parents: A nationwide cohort study in Denmark. *Neurology*; 62 (5): 726-9.

106-Li TQ, Noseworthy MD (2002): Mapping the development of white matter tracts with diffusion tensor imaging. *Developmental Science*; 5(3):293-300.

107-Lin A., Ross B.D., Harris K., Wong W. (2005): Efficacy of proton magnetic resonance spectroscopy in neurological diagnosis and neurotherapeutic decision making. *NeuroRx*; 2:197-214.

108-Lipkin G E, Chodkowski B, Reich DS (2007): Retinal nerve fiber layer is associated with brain atrophy in multiple sclerosis. *Neurology*; 69 (16): 1603–09.

109-Loevner LA., Grossman RI., Cohen JA., Lexa FJ., Kessler D., Kolson DL (1995): Microscopic disease in normal-appearing white matter on conventional MR images in patients with multiple sclerosis: assessment with magnetization-transfer measurements. *Radiology* 1; 196: 511–5.

110-Losseff NA, Wang L, Lai HM(1996): Progressive cerebral atrophy in multiple sclerosis. A serial MRI study. *Brain*; 119(pt6):2009-2019.

111-Lowe MJ, Horenstein C, Hirsch JG (2006): Functional pathway-defined MRI diffusion measures reveal increased transverse diffusivity of water in multiple sclerosis. *Neuroimage*; 32:1127-1133.

112-Lublin FD, Reingold SC (1996): Defining the clinical course of multiple sclerosis: results of an international survey. National Multiple Sclerosis Society (USA) Advisory Committee on Clinical Trials of New Agents in Multiple Sclerosis. *Neurology*; 46(4):907-11.

113-Lucchinetti C, Bruck W, Parisi J, Scherhauer B, Rodriguez M, Lassmann H (2000): Heterogeneity of multiple sclerosis lesions: implications for the pathogenesis of demyelination *Ann Neurol*; 47(6):707-17.

114-Lycklama G, Thompson A, Filippi M (2003): Spinal-cord MRI in multiple sclerosis. *Lancet Neurol*; 2:555–562.

115-Lin. X, Tench C.R., Morgan P.S., Constantinescu C.S. (2008): Use of combined conventional and quantitative MRI to quantify pathology related to cognitive impairment in multiple sclerosis .*J. Neurol. Neurosurg. Psychiatry*; 79: 437–441.

116-Madir I,Rauer S,Gall P,Klose U(2008): 1H MR spectroscopy of inflammation, infection and ischemia of the brain. *European Journal of Radiology*;67(2):250-257.

- 117-Mangin JF, Poupon C, Cointepas Y, Rivière D, Papadopoulos-Orfanos D, Clark CA and Régis J (2002):** A framework based on spin glass models for the inference of anatomical connectivity from diffusion-weighted MR data - a technical review. *NMR Biomed*; 15:481-492.
- 118-Martin H (2003):** Structural and functional organization of the central nervous system. *Textbook of Neuroanatomy text and atlas*, 3rd edition; (2):41-44 McGraw-Hill companies. United States.
- 119-Martinelli V (2000):** Trauma, stress and multiple sclerosis. *Neurol. Sci*; 21 (4 suppl 2): S849–52.
- 120-McDonald WI, Compston A, Edan G, Goodkin D, Hartung HP, Lublin FD, McFarland HF, Paty DW, Polman CH, Reingold SC, Sandberg-Wollheim M, Sibley W, Thompson A, van den Noort S, Weinshenker BY, Wolinsky JS (2001):** Recommended diagnostic criteria for multiple sclerosis: guidelines from the International Panel on the diagnosis of multiple sclerosis. *Ann Neurol* Jul; 50(1):121-7.
- 121-McFarland HF, Markovic-Plese S (2001):** Immunopathogenesis of the multiple sclerosis lesion. *Curr Neurol Neurosci Rep*; 1:257–262.
- 122-McMinn RMH (1994):** Last's Anatomy Regional and Applied, 9th ed;5: 577-616. Elsevier Churchill Livingstone .
- 123-Meier DS, Weiner HL, Khoury SJ, Guttmann CR (2004):** Magnetic resonance imaging surrogates of multiple sclerosis pathology and their relationship to central nervous system atrophy. *J Neuroimaging*; 14:46S-53S.
- 124-Miller A.E., Coyle P.K. (2004):** Clinical features of multiple sclerosis. *Continuum, Lifelong learning in Neurology*; 10(6):38-73.

- 125-Miller D.H., Barkhof F., Montalban X (2005):** Clinically isolated syndromes suggestive of multiple sclerosis, part 2: non-conventional MRI, recovery processes, and management. *Lancet Neurol*; 4:341–348.
- 126-Miller DH, Leary SM. (2007).** Primary-progressive multiple sclerosis. *Lancet Neurol*; 6:903-912.
- 127-Munger KL, Levin LI, Hollis BW, Howard NS, Ascherio A (2006):** Serum 25-hydroxyvitamin D levels and risk of multiple sclerosis. *JAMA*; 296 (23): 2832–8.
- 128-Naheedy M.H. (2003):** CT and MR Imaging of the Whole body, 4th ed; 1- II(4): 93-109.
- 129-Narayana PA (2005):** Magnetic resonance spectroscopy in the monitoring of multiple sclerosis. *J Neuroimaging*; 15:46S-57S.
- 130-Narayana PA, Doyle TJ, Lai D (1998):** Serial proton magnetic resonance spectroscopic imaging, contrast-enhanced magnetic resonance imaging, and quantitative lesion volumetry in multiple sclerosis. *Ann Neurol*; 43:56 –71.
- 131-Narayanan S, Fu L, Pioro E, De Stefano N (1997):** Imaging of axonal damage in multiple sclerosis: spatial distribution of magnetic resonance imaging lesions. *Ann Neurol*; 41:385–391.
- 132-Neema M, Stankiewicz J, Arora A, Guss ZD, Bakshi R. (2007):** MRI in multiple sclerosis . what's inside the toolbox? *Neurotherapeutics*;4: 2–17.
- 133-Noseworthy JH, Lucchinetti C, Rodriguez M, Weinshenker BG, (2000):** Multiple sclerosis. *N Engl J*; 343:938-52.

134-Novotny E.J. Jr, Fulbright R.K., Pearl P.L., Gibson K.M., Rothman D.L. (2003): Magnetic resonance spectroscopy of neurotransmitters in human brain. *Ann Neurol*; 54 Suppl 6:S25-31.

135-Ogawa S, Menon RS, Tank DW (1993): Functional brain mapping by blood oxygenation level-dependent contrast magnetic resonance imaging. A comparison of signal characteristics with a biophysical model. *Biophys J*; 64:803-812.

136-O'Riordan JI, Thompson AJ, Kingsley DP (1998): The prognostic value of brain MRI in clinically isolated syndromes of the CNS. A 10-year follow-up. *Brain*; 121(3):495-503.

137-O'Riordan S, Nor AM, Hutchinson M (2002): CADASIL imitating multiple sclerosis: the importance of MRI markers. *Mult Scler*; 8:430-432.

138-Paolillo A, Piattella MC, Pantano P (2004): The relationship between inflammation and atrophy in clinically isolated syndromes suggestive of multiple sclerosis: a monthly MRI study after triple-dose gadolinium-DTPA. *J Neurol*; 251:432-439.

139-Paolillo A, Pozzilli C, Gasperini C (2000): Brain atrophy in relapsing-remitting multiple sclerosis: relationship with 'black holes,' disease duration and clinical disability. *J Neurol Sci*; 174:85-91.

140-Pascual AM, Martínez-Bisbal MC, Boscá I (2007): Axonal loss is progressive and partly dissociated from lesion load in early multiple sclerosis. *Neurology*; 69 (1): 63–7.

141-Paulesu E, Perani D, Fazio F, Comi G, Pozzilli C, Martinelli V, Filippi M, Bettinardi V, Sirabian G, Passafiume D, Anzini A, Lenzi GL, Canal N, Fieschi C (1996): Functional basis of memory impairment in multiple sclerosis: a [¹⁸F] FDG PET study. *Neuroimage*; 4(2):87-96.

142-Pavese N, Canapicchi R, Nuti A (1994): White matter MRI hyperintensities in a hundred and twenty-nine consecutive migraine patients. *Cephalalgia*; 14:342-345.

143-Phillips MD, Grossman RI, Miki Y (1998): Comparison of T2 lesion volume and magnetization transfer ratio histogram analysis and of atrophy and measures of lesion burden in patients with multiple sclerosis. *AJNR Am J Neuroradiol*; 19:1055-1060.

144-Pirko I, Lucchinetti CF, Sriram S, Bakshi R (2007): Gray matter involvement in multiple sclerosis. *Neurology*; 68:634–642.

145-Polman CH, Reingold SC, Edan G, Filippi M, Hartung H, Kappos L, Lublin FD, Metz LM, McFarland HF, O'Connor PW, Sandberg-Wollheim M, Thompson AJ, Weinshenker BG, Wolinsky JS (2005): Diagnostic criteria for multiple sclerosis: 2005 revisions to the "McDonald Criteria". *Ann Neurol*; 58(6):840-846.

146-Poser CM, Paty DW, Scheinberg L (1983): New diagnostic criteria for multiple sclerosis: guidelines for research protocols. *Ann Neurol*; 13:227-231.

147-Pretorius PM, Quaghebeur G (2003): The role of MRI in the diagnosis of MS. *Clin Radiol*; 58:434–438.

148-Quarantelli M, Ciarmiello A, Morra VB (2003): Brain tissue volume changes in relapsing-remitting multiple sclerosis: correlation with lesion load. *Neuroimage*; 18:360-366.

149-Rentzos M, Nikolaou C, Anagnostouli M, Rombos A, Tsakanikas K, Economou M, Dimitrakopoulos A, Karouli M, Vassilopoulos D (2006): Serum uric acid and multiple sclerosis. *Clinical neurology and neurosurgery*; 108 (6): 527-31.

150-Richert ND, Ostuni JL, Bash CN, Duyn JH, McFarland HF, Frank JA (1998): Serial whole-brain magnetization transfer imaging in patients with relapsing-remitting multiple sclerosis at baseline and during treatment with interferon beta-1b. *AJNR Am J Neuroradiol*; 19:1705-1713.

151-Rocca MA, Falini A, Colombo B, Scotti G, Comi G, Filippi M (2002): Adaptive functional changes in the cerebral cortex of patients with nondisabling multiple sclerosis correlate with the extent of brain structural damage. *Ann Neurol*; 51(3):330-339.

152-Rocca MA, Gavazzi C, Mezzapesa DM, Falini A, Colombo B, Mascalchi M, Scotti G, Comi G, Filippi M (2003): A functional magnetic resonance imaging study of patients with secondary progressive multiple sclerosis. *Neuroimage*; 19(4):1770-1777.

153-Rocca MA, Mastronardo G, Horsfield MA (1999): Comparison of three MR sequences for the detection of cervical cord lesions in patients with multiple sclerosis. *AJNR Am J Neuroradiol*; 20:1710-1716.

154-Rosati G (2001): The prevalence of multiple sclerosis in the world: an update. *Neurol. Sci*; 22 (2): 117–39.

- 155-Rothwell PM, Charlton D (1998):** High incidence and prevalence of multiple sclerosis in south east Scotland: evidence of a genetic predisposition. *J. Neurol. Neurosurg. Psychiatr*; 64 (6): 730–5.
- 156-Rovaris M, Filippi M (1999):** Magnetic resonance techniques to monitor disease evolution and treatment trial outcomes in multiple sclerosis. *Curr Opin Neurol*; Jun; 12(3):337-344.
- 157-Rovaris M, Gass A, Bammer R, Hickman SJ, Ciccarelli O, Miller DH, Filippi M (2005):** Diffusion MRI in multiple sclerosis. *Neurology*; 65(10):1526-1532.
- 158-Rovaris M, Viti B, Ciboddo G (2000):** Brain involvement in systemic immune mediated diseases: magnetic resonance and magnetisation transfer imaging study. *J Neurol Neurosurg Psychiatry*; 68:170-177.
- 159-Rovaris M., Riccitelli G., Judica E., Possa F., Caputo D., Ghezzi ABertolotto., A., Capra R., Falautano M., Mattioli F., Martinelli V., Comi G., Filippi M.(2008):** Cognitive impairment and structural brain damage in benign multiple sclerosis .*Neurology*;71 : 1521–1526
- 160-Rudick RA, Fisher E, Lee JC, Simon J, Jacobs L (1999):** Use of the brain parenchymal fraction to measure whole brain atrophy in relapsing-remitting MS. Multiple Sclerosis Collaborative Research Group. *Neurology*; 53:1698-1704.
- 161-Rudick RA, Lee JC, Simon J, Fisher E (2006):** Significance of T2 lesions in multiple sclerosis: a 13-year longitudinal study. *Ann Neurol*; 60:236-242.

- 162-Rudick, RA, Whitaker, JN (1987):** Cerebrospinal fluid tests for multiple sclerosis. In Scheinberg, P(Ed). Neurology/neurosurgery update series, Vol. 7, CPEC. Princeton, NJ.
- 163-Ryan S, McNicholas M, and Eustace S (2004):** Practical Radiological anatomy; 2nd ed;2 :73-84.
- 164-Sabatini U, Pozzilli C, Pantano P, Koudriavtseva T, Padovani A, Millefiorini E (1996):** Involvement of the limbic system in multiple sclerosis patients with depressive disorders. Biol Psychiatry; 39: 970–975.
- 165-Sadiq SA (2005):** Multiple sclerosis. In: Merritt's Neurology 11th edition. Edited by Rowland LP; (6):320-345 Lippincott Williams & Wilkins.Philadelphia, United states.
- 166-Sahraian M And Eshaghi A(2010):**Role Of Mri In Diagnosis And Treatment Of Multiple Sclerosis, Clinical Neurology and Neurosurgery;112(7):609-615
- 167-Sailer M, O'Riordan JI, Thompson AJ (1999):** Quantitative MRI in patients with clinically isolated syndromes suggestive of demyelination. Neurology; 52:599-606.
- 168-Santa Maria MP, Benedict RHB, Bakshi R, Coad ML, Wack D, Burkard R (2004):**Functional imaging during covert auditory attention in multiple sclerosis. J Neurol Sci; 218:9 –15.
- 169-Sastre-Garriga J, Ingle GT, Chard DT (2005):** Metabolite changes in normal-appearing gray and white matter are linked with disability in early primary progressive multiple sclerosis. Arch Neurol; 62:569 –573.

170-Shah R,Bag AK,Chapman PR,Cure Jk (2010): Progressive multifocal leukoencephalopathy,Clinical Radiology .Elsevier Inc; 65(6): 431-439 .

171-Sharma J, Zivadinov R, Jaisani Z (2006): A magnetization transfer MRI study of deep gray matter involvement in multiple sclerosis. J Neuroimaging; 16:302–310.

172-Sharrack B, Hughes R (2000): Clinical Disablement Scales Used in MS. Int. MS J; 6(3): 97-105.

173-Sibtain N.A., Howe F.A., and Saunders D.E. (2007): The clinical value of proton magnetic resonance spectroscopy in adult brain tumours. Clinical Radiology, 62, 109-119.

174-Silver NC, Good CD, Barker GJ (1997): Sensitivity of contrast enhanced MRI in multiple sclerosis. Effects of gadolinium dose magnetization transfer contrast and delayed imaging. Brain; 120:1149–1161.

175-Simon JH, Jacobs LD, Campion MK (1999): A longitudinal study of brain atrophy in relapsing multiple sclerosis. The Multiple Sclerosis Collaborative Research Group (MSCRG). Neurology; 53:139-148.

176-Simon JH, Kinkel RP, Jacobs L, Bub L, Simonian N (2000): A Wallerian degeneration pattern in patients at risk for MS. Neurology; 54:1155-1160.

177-Simon JH, Lull J, Jacobs LD (2000): A longitudinal study of T1 hypointense lesions in relapsing MS: MSCRG trial of interferon beta-1a. Multiple sclerosis collaborative research group. Neurology; 55:185-192.

178-Singhal S, Rich P, Markus HS (2005): The spatial distribution of MR imaging abnormalities in cerebral autosomal dominant arteriopathy with subcortical infarcts and leukoencephalopathy and their relationship to age and clinical features, *Am J Neuroradiol*; 26(10): 2481-2487.

179-Snell S (2001): Cerebrum. Textbook of Clinical neuroanatomy 5th edition; (7):262-265.

180-Soares D.P. and Law M (2009): Magnetic resonance spectroscopy of the brain: review of metabolites and clinical applications. *Clinical Radiology*; 64(10):1042-1043.

181-Sorensen PS, Jonsson A, Mathiesen HK (2006): The relationship between MRI and PET changes and cognitive disturbances in MS. *J Neurol Sci*; 245:99-102.

182-Sotelo J, Martínez-Palomo A, Ordoñez G, Pineda B (2008): Varicella-zoster virus in cerebrospinal fluid at relapses of multiple sclerosis. *Ann. Neurol*; 63 (3): 303–11.

183-Srinivasan R, Sailasuta N, Hurd R, Nelson S, Pelletier D (2005): Evidence of elevated glutamate in multiple sclerosis using magnetic resonance spectroscopy at 3 T. *Brain*; 128:1016-1025.

184-Sun X, Tanaka M, Kondo S, Okamoto K, Hirai S (1998): Clinical significance of reduced cerebral metabolism in multiple sclerosis: acombined PET and MRI study. *Ann Nucl Med*; 12:89 –94.

185-Sundgren PC, Dong Q, Gómez-Hassan D, Mukherji SK, Maly P, and Welsh R (2004): Diffusion tensor imaging of the brain: review of clinical applications. *Neuroradiology*; 46:339-350.

186-Symms M, Jager HR, Schmierer K (2004): A review of structural magnetic resonance neuroimaging. *J Neurol Neurosurg Psychiatry*; 75:1235–1244.

187-Symms M, Focke N, Burdett J, Duncan JS (2008): Voxel-based analysis of whole brain flair at 3t detects focal cortical dysplasia. *J Epilepsia*; 49(5):786-793

188-Tataru N, Vidal C, Decavel P, Berger E, Rumbach L (2006): Limited impact of the summer heat wave in France (2003) on hospital admissions and relapses for multiple sclerosis. *Neuroepidemiology*; 27 (1): 28–32.

189-Tourbah A and berry I (2000): MRI in multiple sclerosis. *Patho Biol Paris*; 48(2): 151-61.

190- Trapp BD, Peterson J, Ransohoff R, Rudick R, Al E (1998): Axonal transection in the lesions of multiple sclerosis. *N Engl J Med*; 338:278.

191-Trip SA, Miller DH (2005): Imaging in multiple sclerosis. *J Neurol Neurosurg Psychiatry*; 76(III):iii11–iii18.

192-Triulzi F, Scotti G (1998): Differential diagnosis of multiple sclerosis: contribution of magnetic resonance techniques. *J Neurol Neurosurg Psychiatry*; 64:S6-14.

193-Valk J, Van der Knapp MS (1989): White matter and myelin .In textbook of: Magnetic resonance of myelin and myelin disorders.2nd edition; (1): 4 21.Springer-Verlag.Berlin.

194-Van Buchem MA, McGowan JC, Kolson DL, Polansky M, Grossman RI (1996): Quantitative volumetric magnetization transfer analysis in multiple sclerosis: estimation of macroscopic and microscopic disease burden. *Magn Reson Med*; 36:632–636.

- 195-Van Buchem MA, Udupa JK, Heyning FH (1997):** Volumetric quantitation of intracranial macroscopic and microscopic disease burden in multiple sclerosis based on magnetization transfer. *AJNR Am J Neuroradiol*; 18:1287–1290
- 196-Van der Mei IA, Ponsonby AL, Dwyer T (2003):** Past exposure to sun, skin phenotype, and risk of multiple sclerosis: case-control study. *BMJ*; 327 (7410): 316.
- 197-Van Walderveen MA, Kamphorst W, Scheltens P (1998):** Histopathologic correlation of hypointense lesions on T1-weighted spin-echo MRI in multiple sclerosis. *Neurology*; 50:1282-1288.
- 198-Vrenken H, Pouwels PJ, Geurts JJ (2006):** Altered diffusion tensor in multiple sclerosis normal-appearing brain tissue: cortical diffusion changes seem related to clinical deterioration. *J Magn Reson Imaging*; 23:628-636.
- 199-Wakna Setsu, Jiang Hangyi, Lidia M., Peter C (2003):** Fiber Tract-based Atlas of Human White Matter Anatomy. *RSNA*; 230:77–87.
- 200-Warfield SK, Talos F, Tei A, Bharatha A, Nabavi A, Ferrant M, Black PM, Jolesz FA, and Kikinis R (2002):** Real-time registration of volumetric brain MRI by biomechanical simulation of deformation during image guided neurosurgery. *Comput. Visual. Sci*; 5:3-11.
- 201-Watts R, Liston C, Niogi S, and Uluğ AM (2003):** Fiber tracking using magnetic resonance diffusion tensor imaging and its applications to human brain development. *MRDD Research Reviews*; 9:168-177.
- 202-Waxman SG (1997):** Correlative Neuro-anatomy 23rded, Middle East edition; 7:83-157.

203-Weinshenker B.G. (1995): The natural history of multiple sclerosis. Neurol Clin; 13(1):119-146.

204-Weinshenker BG, Bass B, Rice GP, Noseworthy J, Carriere W, Baskerville J, Ebers GC (1989): The natural history of multiple sclerosis: a geographically based study. I. Clinical course and disability. Brain; 112 (1):133-146.

205-Weinshenker BG, Rice GP, Noseworthy JH, Carriere W, Baskerville J, Ebers GC (1991): The natural history of multiple sclerosis: a geographically based study. 3. Multivariate analysis of predictive factors and models of outcome. Brain; 114 (2):1045-1056.

206-Werring DJ, Brassat D, Droogan AG, Clark CA, Symms MR, Barker GJ. (2000): The pathogenesis of lesions and normal-appearing white matter changes in multiple sclerosis: a serial diffusion MRI study. Brain; 123:1667–1676.

207-Wolinsky JS, Narayana P (2002): Magnetic resonance spectroscopy in multiple sclerosis: window into the diseased brain. Curr Opin Neurol; 15:247–251.

208-Worthington J, Jones R, Crawford M, Forti A (1994): Pregnancy and multiple sclerosis-a 3-year prospective study. J. Neurol; 241 (4): 228–33.

209-Yao SY, Stratton CW, Mitchell WM, Sriram S (2001): CSF oligoclonal bands in MS include antibodies against Chlamydomonas antigens. Neurology; 56 (9): 1168-76.

210-Zhukov L, Museth K, Breen D, Whitaker R, and Barr A (2003):

Level set modeling and segmentation of DT-MRI brain data. J. Electronic Imaging; 12:125-133.

211-Zipp F (2009): A new window in multiple sclerosis pathology: non-conventional quantitative magnetic resonance imaging outcomes. Journal of Neurological Sciences;287:s24-s29.

212-Zivadinov R, Bakshi R (2004): Central nervous system atrophy and clinical status in multiple sclerosis. J Neuroimaging; 14:27S-35S.

213-Zivadinov R, Leist TP (2005): Clinical-magnetic resonance imaging correlations in multiple sclerosis. J Neuroimaging; 15:10S–21S.