Bölüm 13

ASTIM MİGREN İLİŞKİSİ

Hasan ÖLMEZ[1]

Giriş

Astım doğrudan ya da dolaylı uyaranlara karşı gelişen hava yolu aşırı duyarlılığı ile ilişkili kronik hava yolu inflamasyonu ile karakterize heterojen bir hastalıktır. Astım hastalarında hırıltı, nefes darlığı, göğüste sıkışma, öksürük gibi solunum semptomları ve ekspiratuar hava akımı kısıtlılığı mevcuttur. Semptomlarla birlikte hava akımı kısıtlılığı ve yoğunluğu da karakteristik olarak zaman içinde değişkenlik gösterir. Astım atağı genellikle allerji, irritanlar, egzersiz, hava değişimi veya solunum infeksiyonları gibi çeşitli faktörler nedeniyle tetiklenir (GINA., 2015).

Astım hastalığı yüksek prevalansı, zayıf astım kontrolü nedeniyle önemli bir sosyoekonomik yük oluşturur (Solé, Aranda, & Wandalsen, 2017). Astım hastalığının prevalansı ülkelere göre farklılık gösterir. Astım prevalansı endüstrileşmiş ülkelerde son dekadda artış göstermiştir (Ellwood ark., 2017; Sears, 2014) Astım yaklaşık dünya çapında 300 milyon kişiyi etkiler ve 250.000 astım ile ilgili ölüm bildirilmiştir. Astım prevalansı arasında ülkeler arasında % 1 ve % 18. oranında değişir (Holgate, 1999; Ober, 2005) Türkiyede yapılmış bir çalışmada astım prevalansını 1997-2004 yılları arasında %12,3 olarak bulunmuştur("Türk Toraks Derneği Astım Tanı Ve Tedavi Rehberi,, 2010.). Astıma bağlı solunum semptomları son 30-40 yıl içinde artmıştır. Gelişmiş ülkelerde bu durum yatay bir seyir izlese de gelişmekte olan ülkelerde artış devam etmektedir (Asher ark., 2006; Pearce ark., 2007).

Astım ve diğer alerjik solunum yolu hastalıkları, kadınlarda erkeklere göre 3 kat fazla görülür. (De Marco ark., 2002; Mannino ark., 2002; Schatz & Camargo, 2003). Farklı çalışmalarda Astım hastarına alerjik rinit, obezite ve gastroözofageal reflu ve psikiyatrik hastalıklar eşlik ettiği gösterilmiştir (Adams ark., 2004; de Groot, Duiverman, & Brand, 2010; Pinto Pereira & Seemungal, 2010)

Migren baş ağrısı, iskemik inmeye sebep olabilen; sıklıkla bulantı, kusma, ışık ve sesli uyaranlara karşı aşırı duyarlılığın eşlik ettiği sık görülen nörolojik bir hastalıktır (Becker, 2017; MacGregor, 2017) Migren hastalığının prevalansı erkeklerde % 6-8 kadınlarda % 15-18 oranında bildirilmiştir (Katsarava, Buse, Manack, & Lipton, 2012) Dünya çapında dokuz yetişkinden biri migren hastalığından etkiliyor gibi görünmektedir (IHS., 2013). Migren Dünya Sağlık Örgütü (WHO) tarafından 19 'uncu sakat bırakan hastalık olarak sıralanmıştır ve büyük sağlık ve ekonomik yüke

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Kaynakça

Aamodt, A. H., Stovner, L. J., Langhammer, A., Hagen, K., & Zwart, J.-A. (2007). Is headache related to asthma, hay fever, and chronic bronchitis? The Head-HUNT Study. *Headache*, *47*(2), 204–212. https://doi.org/10.1111/j.1526-4610.2006.00597.x

ABU-ARAFEH, I., RAZAK, S., SIVARAMAN, B., & GRAHAM, C. (2010). Prevalence of headache and migraine in children and adolescents: a systematic review of population-based studies. *Developmental Medicine & Child Neurology*, *52*(12), 1088–1097. https://doi.org/10.1111/j.1469-8749.2010.03793.x

Adams, R. J., Wilson, D. H., Taylor, A. W., Daly, A., Tursan d'Espaignet, E., Dal Grande, E., & Ruffin, R. E. (2004). Psychological factors and asthma quality of life: a population based study. *Thorax*, *59*(11), 930–935. https://doi.org/10.1136/thx.2003.010256

Alpay, K., Ertas, M., Orhan, E. K., Ustay, D. K., Lieners, C., & Baykan, B. (2010). Diet restriction in migraine, based on IgG against foods: a clinical double-blind, randomised, cross-over trial. *Cephalalgia : An International Journal of Headache*, *30*(7), 829–837. https://doi.org/10.1177/0333102410361404

Antonaci, F., Voiticovschi-Iosob, C., Di Stefano, A. L., Galli, F., Ozge, A., & Balottin, U. (2014). The evolution of headache from childhood to adulthood: a review of the literature. *The Journal of Headache and Pain*, *15*(1), 15. https://doi.org/10.1186/1129-2377-15-15

Artto, V., Wessman, M., Nissilä, M., Säkö, E., Liukkonen, J., Teirmaa, H., … Kallela, M. (2006). Comorbidity in Finnish migraine families. *The Journal of Headache and Pain*, *7*(5), 324–330. https://doi.org/10.1007/s10194-006-0319-x

Asher, M. I., Montefort, S., Björkstén, B., Lai, C. K. W., Strachan, D. P., Weiland, S. K., … ISAAC Phase Three Study Group. (2006). Worldwide time trends in the prevalence of symptoms of asthma, allergic rhinoconjunctivitis, and eczema in childhood: ISAAC Phases One and Three repeat multicountry cross-sectional surveys. *Lancet (London, England)*, *368*(9537), 733–743. https://doi.org/10.1016/S0140-6736(06)69283-0

Aupiais, C., Wanin, S., Romanello, S., Spiri, D., Moretti, R., Boizeau, P., … Titomanlio, L. (2017). Association Between Migraine and Atopic Diseases in Childhood: A Potential Protective Role of Anti-Allergic Drugs. *Headache*, *57*(4), 612–624. https://doi.org/10.1111/head.13032

Becker, W. J. (2017). The Diagnosis and Management of Chronic Migraine in Primary Care. *Headache: The Journal of Head and Face Pain*, *57*(9), 1471–1481. https://doi.org/10.1111/head.13089

Boćkowski, L., Sobaniec, W., & Żelazowska-Rutkowska, B. (2009). Proinflammatory Plasma Cytokines in Children With Migraine. *Pediatric Neurology*, *41*(1), 17–21. https://doi.org/10.1016/J.PEDIATRNEUROL.2009.02.001

Boes, T., & Levy, D. (2012). Influence of sex, estrous cycle, and estrogen on intracranial dural mast cells. *Cephalalgia : An International Journal of Headache*, *32*(12), 924–931. https://doi.org/10.1177/0333102412454947

Bolay, H. (2013). En'lightning' the impact of atmospheric conditions in headache. *Cephalalgia*, *33*(6), 362–364. https://doi.org/10.1177/0333102412474507

Bolay, H., & Rapoport, A. (2011). Does low atmospheric pressure independently trigger migraine? *Headache*, *51*(9), 1426–1430. https://doi.org/10.1111/j.1526-4610.2011.01996.x

Brandes, J. L., Visser, W. H., Farmer, M. V, Schuhl, A. L., Malbecq, W., Vrijens, F., … Protocol 125 study group. (2004). Montelukast for migraine prophylaxis: a randomized, double-blind, placebo-controlled study. *Headache*, *44*(6), 581–586. https://doi.org/10.1111/j.1526-4610.2004.446006.x

Breslau, N., & Rasmussen, B. K. (2001). The impact of migraine: Epidemiology, risk factors, and co-morbidities. *Neurology*, *56*(6 Suppl 1), S4-12. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/11294954

Buse, D. C., Manack, A., Serrano, D., Turkel, C., & Lipton, R. B. (2010). Sociodemographic and comorbidity profiles of chronic migraine and episodic migraine sufferers. *Journal of Neurology, Neurosurgery, and Psychiatry*, *81*(4), 428–432. https://doi.org/10.1136/jnnp.2009.192492

Buzzi, M. G., Cologno, D., & Formisano, R. (2005). Migraine disease: evolution and progression. *The Journal of Headache and Pain*, *6*(4), 304–306. https://doi.org/10.1007/s10194-005-0215-9

Centers for Disease Control and Prevention (CDC). (2011). Vital signs: asthma prevalence, disease characteristics, and self-management education: United States, 2001--2009. *MMWR. Morbidity and Mortality Weekly Report*, *60*(17), 547–552. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/21544044

Chauhan, B. F., & Ducharme, F. M. (2014). Addition to inhaled corticosteroids of long-acting beta $_2$ -agonists versus anti-leukotrienes for chronic asthma. *Cochrane Database of Systematic Reviews*, (1), CD003137. https://doi.org/10.1002/14651858.CD003137.pub5

Chen, T. C., & Leviton, A. (1990). Asthma and eczema in children born to women with migraine. *Archives of Neurology*, *47*(11), 1227–1230. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/2241619

Chen, T. C., Leviton, A., Edelstein, S., & Ellenberg, J. H. (1987). Migraine and other diseases in women of reproductive age. The influence of smoking on observed associations. *Archives of Neurology*, *44*(10), 1024–1028. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/3632373

Chen, W., Beck, I., Schober, W., Brockow, K., Effner, R., Buters, J. T. M., … Ring, J. (2010). Human mast cells express androgen receptors but treatment with testosterone exerts no influence on IgE-independent mast cell degranulation elicited by neuromuscular blocking agents. *Experimental Dermatology*, *19*(3), 302–304. https://doi.org/10.1111/j.1600-0625.2009.00969.x

Cologno, D., Buzzi, M. G., Carlesimo, G. A., Cicinelli, P., Costa, A., Fadda, L., … Caltagirone, C. (2005). Psychiatric disorders and pain location in unilateral migraineurs. *The Journal of Headache and Pain*, *6*(4), 227–230. https://doi.org/10.1007/s10194-005-0192-z

Colombo, B. (2014). Migraine: Pathophysiology and Classification. In *Vestibular Migraine and Related Syndromes* (pp. 1–17). Cham: Springer International Publishing. https://doi.org/10.1007/978-3-319-07022-3_1

Dalkara, T., Nozari, A., & Moskowitz, M. A. (2010). Migraine aura pathophysiology: the role of blood vessels and microembolisation. *The Lancet. Neurology*, *9*(3), 309–317. https://doi.org/10.1016/S1474-4422(09)70358-8

Davey, G., Sedgwick, P., Maier, W., Visick, G., Strachan, D. P., & Anderson, H. R. (2002). Association between migraine and asthma: matched case-control study. *The British Journal of General Practice : The Journal of the Royal College of General Practitioners*, *52*(482), 723–727. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/12236275

de Groot, E. P., Duiverman, E. J., & Brand, P. L. P. (2010). Comorbidities of asthma during childhood: possibly important, yet poorly studied. *The European Respiratory Journal*, *36*(3), 671–678. https://doi.org/10.1183/09031936.00185709

De Marco, R., Locatelli, F., Cerveri, I., Bugiani, M., Marinoni, A., Giammanco, G., & Italian Study on Asthma in Young Adults study group. (2002). Incidence and remission of asthma: a retrospective study on the natural history of asthma in Italy. *The Journal of Allergy and Clinical Immunology*, *110*(2), 228–235. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/12170262

Devillier, P., Baccard, N., & Advenier, C. (1999). Leukotrienes, leukotriene receptor antagonists and leukotriene synthesis inhibitors in asthma: an update. Part I: synthesis, receptors and role of leukotrienes in asthma. *Pharmacological Research*, *40*(1), 3–13. https://doi.org/10.1006/phrs.1998.0458

Dirican, N., Demirci, S., & Cakir, M. (2017). The relationship between migraine headache and asthma features. *Acta Neurologica Belgica*, *117*(2), 531–536. https://doi.org/10.1007/s13760-017-0764-0

Ellwood, P., Asher, M. I., Billo, N. E., Bissell, K., Chiang, C.-Y., Ellwood, E. M., … Strachan, D. P. (2017). The Global Asthma Network rationale and methods for Phase I global surveillance: prevalence, severity, management and risk factors. *The European Respiratory Journal*, *49*(1), 1601605. https://doi.org/10.1183/13993003.01605-2016

Fanning, L. B., & Boyce, J. A. (2013). Lipid mediators and allergic diseases. *Annals of Allergy, Asthma & Immunology*, *111*(3), 155–162. https://doi.org/10.1016/j.anai.2013.06.031

Fernandes, D. J., Mitchell, R. W., Lakser, O., Dowell, M., Stewart, A. G., & Solway, J. (2003). Do inflammatory mediators influence the contribution of airway smooth muscle contraction to airway hyperresponsiveness in asthma? *Journal of Applied Physiology (Bethesda, Md. : 1985)*, *95*(2), 844–853. https://doi.org/10.1152/japplphysiol.00192.2003

Ferrari, M. D., Klever, R. R., Terwindt, G. M., Ayata, C., & van den Maagdenberg, A. M. J. M. (2015). Migraine pathophysiology: lessons from mouse models and human genetics. *The Lancet Neurology*, *14*(1), 65–80. https://doi.org/10.1016/S1474-4422(14)70220-0

Gazerani, P., Pourpak, Z., Ahmadiani, A., Hemmati, A., & Kazemnejad, A. (2003). A correlation between migraine, histamine and immunoglobulin e. *Scandinavian Journal of Immunology*, *57*(3), 286–290. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/12641658

Genovese, A., Patella, V., De Crescenzo, G., De Paulis, A., Spadaro, G., & Marone, G. (1997). Loratadine and desethoxylcarbonyl-loratadine inhibit the immunological release of mediators from human Fc epsilon RI+ cells. *Clinical and Experimental Allergy : Journal of the British Society for Allergy and Clinical Immunology*, *27*(5), 559–567. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/9179431

Global Initiative for Asthma [GINA]. Global strategy for asthma management and prevention [Update2015].Avaliable.from:http://www.ginasthma.org/local/uploads/files/GINA_Report_2015.pdf. (n.d.).

Glover, V., Jarman, J., & Sandler, M. (n.d.). Migraine and depression: biological aspects. *Journal of Psychiatric Research*, *27*(2), 223–231. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/8366471

Graif, Y., Shohat, T., Machluf, Y., Farkash, R., & Chaiter, Y. (2018). Association between Asthma and Migraine - A Cross-Sectional Study of over 110,000 Adolescents. *The Clinical Respiratory Journal*. https://doi.org/10.1111/crj.12939

Gryglas, A. (2016). Allergic Rhinitis and Chronic Daily Headaches: Is There a Link? *Current Neurology and Neuroscience Reports*, *16*(4), 33. https://doi.org/10.1007/s11910-016-0631-z

Güngen, A. C., & Güngen, B. (2017). Assessment of Headache in Asthma Patients. *Pakistan Journal of Medical Sciences*, *33*(1), 156–161. https://doi.org/10.12669/pjms.331.11720

Guo, H., Liu, T., Uemura, Y., Jiao, S., … D. W.-C. & molecular, & 2010, undefined. (n.d.). Bisphenol A in combination with TNF-α selectively induces Th2 cell-promoting dendritic cells in vitro with an estrogen-like activity. *Nature.Com*. Retrieved from https://www.nature.com/articles/cmi201014

Guven, H., Çilliler, A. E., & Çomoğlu, S. S. (2013). Unilateral cranial autonomic symptoms in patients with migraine. *Acta Neurologica Belgica*, *113*(3), 237–242. https://doi.org/10.1007/s13760-012-0164-4

Hallstrand, T. S., Lai, Y., Henderson, W. R., Altemeier, W. A., & Gelb, M. H. (2012). Epithelial regulation of eicosanoid production in asthma. *Pulmonary Pharmacology & Therapeutics*, *25*(6), 432–437. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/23323271

Hayashi, T. (1988). Asthma and migraine--is asthma a part of acephalgic migraine? A hypothesis. *Annals of Allergy*, *60*(4), 374. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/2451891

Headache Classification Committee of the International Headache Society (IHS). (2013). The International Classification of Headache Disorders, 3rd edition (beta version). *Cephalalgia*, *33*(9), 629–808. https://doi.org/10.1177/0333102413485658

Hirst, S. J. (2000). Airway smooth muscle as a target in asthma. *Clinical and Experimental Allergy : Journal of the British Society for Allergy and Clinical Immunology*, *30 Suppl 1*, 54–59. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/10849477

Holgate, S. T. (1999). Genetic and environmental interaction in allergy and asthma. *The Journal of Allergy and Clinical Immunology*, *104*(6), 1139–1146. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/10588993

Holland, S., Silberstein, S. D., Freitag, F., Dodick, D. W., Argoff, C., Ashman, E., & Quality Standards Subcommittee of the American Academy of Neurology and the American Headache Society. (2012). Evidence-based guideline update: NSAIDs and other complementary treatments for episodic migraine prevention in adults: [RETIRED]. *Neurology*, *78*(17), 1346–1353. https://doi.org/10.1212/WNL.0b013e3182535d0c

Ince, H., Aydin, Ö. F., Alaçam, H., Aydin, T., Azak, E., & Özyürek, H. (2014). Urinary leukotriene E4 and prostaglandin F2a concentrations in children with migraine: a randomized study. *Acta Neurologica Scandinavica*, *130*(3), 188–192. https://doi.org/10.1111/ane.12263

Jia, Y., & Lee, L.-Y. (2007). Role of TRPV receptors in respiratory diseases. *Biochimica et Biophysica Acta (BBA) - Molecular Basis of Disease*, *1772*(8), 915–927. https://doi.org/10.1016/j.bbadis.2007.01.013

Kaleagasi, H., Özgür, E., Özge, C., & Özge, A. (2011). Bronchial Hyper-Reactivity in Migraine Without Aura: Is It a New Clue for Inflammation? *Headache: The Journal of Head and Face Pain*, *51*(3), 426–431. https://doi.org/10.1111/j.1526-4610.2010.01798.x

Kari, E., & DelGaudio, J. M. (2008). Treatment of sinus headache as migraine: the diagnostic utility of triptans. *The Laryngoscope*, *118*(12), 2235–2239. https://doi.org/10.1097/MLG.0b013e318182f81d

Katsarava, Z., Buse, D. C., Manack, A. N., & Lipton, R. B. (2012). Defining the Differences Between Episodic Migraine and Chronic Migraine. *Current Pain and Headache Reports*, *16*(1), 86–92. https://doi.org/10.1007/s11916-011-0233-z

Lai, T.-H., Fuh, J.-L., & Wang, S.-J. (2009). Cranial autonomic symptoms in migraine: characteristics and comparison with cluster headache. *Journal of Neurology, Neurosurgery, and Psychiatry*, *80*(10), 1116–1119. https://doi.org/10.1136/jnnp.2008.157743

Lassen, L. H., Ashina, M., Christiansen, I., Ulrich, V., & Olesen, J. (1997). Nitric oxide synthase inhibition in migraine. *Lancet (London, England)*, *349*(9049), 401–402. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/9033475

Levy, D. (2009). Migraine pain, meningeal inflammation, and mast cells. *Current Pain and Headache Reports*, *13*(3), 237–240. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/19457286

Ligeiro de Oliveira, A. P., Oliveira-Filho, R. M., da Silva, Z. L., Borelli, P., & Tavares de Lima, W. (2004). Regulation of allergic lung inflammation in rats: interaction between estradiol and corticosterone. *Neuroimmunomodulation*, *11*(1), 20–27. https://doi.org/10.1159/000072965

Lippert, U., Möller, A., Welker, P., Artuc, M., & Henz, B. M. (2000). Inhibition of cytokine secretion from human leukemic mast cells and basophils by H1- and H2-receptor antagonists. *Experimental Dermatology*, *9*(2), 118–124. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/10772385

Loewendorf, A. I., Matynia, A., Saribekyan, H., Gross, N., Csete, M., & Harrington, M. (2016). Roads Less Traveled: Sexual Dimorphism and Mast Cell Contributions to Migraine Pathology. *Frontiers in Immunology*, *7*, 140. https://doi.org/10.3389/fimmu.2016.00140

MacGregor, E. A. (2017). Migraine. *Annals of Internal Medicine*, *166*(7), ITC49. https://doi.org/10.7326/AITC201704040

Mai, X.-M., Böttcher, M. F., Bruhammar, M., Nilsson, L., & Zetterström, O. (2005). Urinary inflammatory mediators and inhalation of hypertonic saline in children. *Allergy*, *60*(1), 60–64. https://doi.org/10.1111/j.1398-9995.2004.00623.x

Mannino, D. M., Homa, D. M., Akinbami, L. J., Moorman, J. E., Gwynn, C., & Redd, S. C. (2002). Surveillance for asthma--United States, 1980-1999. *Morbidity and Mortality Weekly Report. Surveillance Summaries (Washington, D.C. : 2002)*, *51*(1), 1–13. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/12420904

Markowitz, S., Saito, K., & Moskowitz, M. A. (1988). Neurogenically mediated plasma extravasation in dura mater: effect of ergot alkaloids. A possible mechanism of action in vascular headache. *Cephalalgia : An International Journal of Headache*, *8*(2), 83–91. https://doi.org/10.1046/j.1468-2982.1988.0802083.x

Martin, V. T., Fanning, K. M., Serrano, D., Buse, D. C., Reed, M. L., & Lipton, R. B. (2016). Asthma is a risk factor for new onset chronic migraine: Results from the American migraine prevalence and prevention study. *Headache*, *56*(1), 118–131. https://doi.org/10.1111/head.12731

Meents, J. E., Neeb, L., & Reuter, U. (2010). TRPV1 in migraine pathophysiology. *Trends in Molecular Medicine*, *16*(4), 153–159. https://doi.org/10.1016/j.molmed.2010.02.004

Millichap, J. G., & Yee, M. M. (2003). The diet factor in pediatric and adolescent migraine. *Pediatric Neurology*, *28*(1), 9–15. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/12657413

Modena, B. D., Dazy, K., & White, A. A. (2016). Emerging concepts: mast cell involvement in allergic diseases. *Translational Research : The Journal of Laboratory and Clinical Medicine*, *174*, 98–121. https://doi.org/10.1016/j.trsl.2016.02.011

Mortimer, M. J., Kay, J., Gawkrodger, D. J., Jaron, A., & Barker, D. C. (1993). The prevalence of headache and migraine in atopic children: an epidemiological study in general practice. *Headache*, *33*(8), 427–431. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/8262782

Narita, S., Goldblum, R. M., Watson, C. S., Brooks, E. G., Estes, D. M., Curran, E. M., & Midoro-Horiuti, T. (2006). Environmental Estrogens Induce Mast Cell Degranulation and Enhance IgE-Mediated Release of Allergic Mediators. *Environmental Health Perspectives*, *115*(1), 48–52. https://doi.org/10.1289/ehp.9378

O'Sullivan, S., Roquet, A., Dahlén, B., Dahlén, S., & Kumlin, M. (1998). Urinary excretion of inflammatory mediators during allergen-induced early and late phase asthmatic reactions. *Clinical and Experimental Allergy : Journal of the British Society for Allergy and Clinical Immunology*, *28*(11), 1332–1339. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/9824404

Ober, C. (2005). Perspectives on the past decade of asthma genetics. *The Journal of Allergy and Clinical Immunology*, *116*(2), 274–278. https://doi.org/10.1016/j.jaci.2005.04.039

Özge, A., Öksüz, N., Ayta, S., Uluduz, D., Yıldırım, V., Toros, F., & Taşdelen, B. (2014). Atopic disorders are more common in childhood migraine and correlated headache phenotype. *Pediatrics International : Official Journal of the Japan Pediatric Society*, *56*(6), 868–872. https://doi.org/10.1111/ped.12381

Ozge, A., Ozge, C., Oztürk, C., Kaleagasi, H., Ozcan, M., Yalçinkaya, D. E., … Yalçin, F. (2006). The relationship between migraine and atopic disorders-the contribution of pulmonary function tests and immunological screening. *Cephalalgia : An International Journal of Headache*, *26*(2), 172–179. https://doi.org/10.1111/j.1468-2982.2005.01021.x

Ozge, A., Öztürk, C., Dora, B., Inan, L., … S. S.-J. N. S., & 2008, undefined. (n.d.). Is there an association between migraine and atopic disorders? The results of multicenter migraine attack study. *Jns.Dergisi.Org*. Retrieved from http://jns.dergisi.org/text.php?&id=234

Pearce, N., Ait-Khaled, N., Beasley, R., Mallol, J., Keil, U., Mitchell, E., … ISAAC Phase Three Study Group. (2007). Worldwide trends in the prevalence of asthma symptoms: phase III of the International Study of Asthma and Allergies in Childhood (ISAAC). *Thorax*, *62*(9), 758–766. https://doi.org/10.1136/thx.2006.070169

Peatfield, R., Glover, V., Littlewood, J., Sandler, M., & Rose, F. C. (1984). The Prevalence of Diet-Induced Migraine. *Cephalalgia*, *4*(3), 179–183. https://doi.org/10.1046/j.1468-2982.1984.0403179.x

Peng, Y.-H., Chen, K.-F., Kao, C.-H., Chen, H.-J., Hsia, T.-C., Chen, C.-H., & Liao, W.-C. (2016). Risk of Migraine in Patients With Asthma. *Medicine*, *95*(9), e2911. https://doi.org/10.1097/MD.0000000000002911

Pinto Pereira, L. M., & Seemungal, T. A. (2010). Comorbid disease in asthma: the importance of diagnosis. *Expert Review of Respiratory Medicine*, *4*(3), 271–274. https://doi.org/10.1586/ers.10.31

Riesco, N., Pérez-Alvarez, A. I., Verano, L., García-Cabo, C., Martínez-Ramos, J., Sánchez-Lozano, P., … Pascual, J. (2016). Prevalence of cranial autonomic parasympathetic symptoms in chronic migraine: Usefulness of a new scale. *Cephalalgia : An International Journal of Headache*, *36*(4), 346–350. https://doi.org/10.1177/0333102415593087

Rosario, D., & Pinto, G. (2014). Role of Gender and Serum Immunoglobulin E (IGE) levels on Severity of Migraine. *Journal of Clinical and Diagnostic Research : JCDR*, *8*(2), 57–58. https://doi.org/10.7860/JCDR/2014/7516.4007

Rozen, T. D. (2011). A history of cigarette smoking is associated with the development of cranial autonomic symptoms with migraine headaches. *Headache*, *51*(1), 85–91. https://doi.org/10.1111/j.1526-4610.2010.01707.x

Rozen, T. D., Swanson, J. W., Stang, P. E., McDonnell, S. K., & Rocca, W. A. (1999). Increasing incidence of medically recognized migraine headache in a United States population. *Neurology*, *53*(7), 1468–1473. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/10534253

Sayyah, M., Saki-Malehi, A., Javanmardi, F., Forouzan, A., Shirbandi, K., & Rahim, F. (2018). Which came first, the risk of migraine or the risk of asthma? A systematic review. *Neurologia i Neurochirurgia Polska*. https://doi.org/10.1016/j.pjnns.2018.07.004

Schatz, M., & Camargo, C. A. (2003). The relationship of sex to asthma prevalence, health care utilization, and medications in a large managed care organization. *Annals of Allergy, Asthma & Immunology : Official Publication of the American College of Allergy, Asthma, & Immunology*, *91*(6), 553–558. https://doi.org/10.1016/S1081-1206(10)61533-5

Sears, M. R. (2014). Trends in the Prevalence of Asthma. *Chest*, *145*(2), 219–225. https://doi.org/10.1378/chest.13-2059

Sheftell, F., Rapoport, A., Weeks, R., Walker, B., Gammerman, I., & Baskin, S. (2000). Montelukast in the prophylaxis of migraine: a potential role for leukotriene modifiers. *Headache*, *40*(2), 158–163. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/10759916

Silberstein, S. D. (2005). Cardiovascular risk factors associated with migraine. *The Lancet Neurology*, *4*(7), 391–392. https://doi.org/10.1016/S1474-4422(05)70103-4

Silberstein, S., Lipton, R., & Breslau, N. (1995). Migraine: Association with Personality Characteristics and Psychopathology. *Cephalalgia*, *15*(5), 358–369. https://doi.org/10.1046/j.1468-2982.1995.1505358.x

Sillanpää, M. (1983). Prevalence of headache in prepuberty. *Headache*, *23*(1), 10–14. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/6826344

Sillanpää, M., & Aro, H. (2000). Headache in teenagers: comorbidity and prognosis. *Functional Neurology*, *15 Suppl 3*, 116–121. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/11200781

Solé, D., Aranda, C. S., & Wandalsen, G. F. (2017). Asthma: epidemiology of disease control in Latin America - short review. *Asthma Research and Practice*, *3*(1), 4. https://doi.org/10.1186/s40733-017-0032-3

Tepe N, Bolay H, ark. Migren Baş ağrısı. Nörolojide Yeni Ufuklar Baş ağrıları içinde. 1. Baskı. Güneş, Tıp Kitabevleri, Ankara, (2011); pp 33–62. (n.d.).

Theoharides, T. C., Donelan, J., Kandere-Grzybowska, K., & Konstantinidou, A. (2005). The role of mast cells in migraine pathophysiology. *Brain Research. Brain Research Reviews*, *49*(1), 65–76. https://doi.org/10.1016/j.brainresrev.2004.11.006

Tucker, G. F. (1977). Pulmonary Migraine. *Annals of Otology, Rhinology & Laryngology*, *86*(5), 671–676. https://doi.org/10.1177/000348947708600524

Turan, M. O., Celik Susuz, C., & Turan, P. A. (2017). Presence of Headache and Migraine in Asthma Patients. *Turkish Thoracic Journal*, *18*(2), 47–51. https://doi.org/10.5152/TurkThoracJ.2017.16008

Türk Toraks Derneği Astım Tanı Ve Tedavi Rehberi, 2010, http://toraks.org.tr/uploadFiles/book/file/410201117401-Astim-Rehberi. (n.d.).

Uemura, Y., Liu, T.-Y., Narita, Y., Suzuki, M., & Matsushita, S. (2008). 17 Beta-estradiol (E2) plus tumor necrosis factor-alpha induces a distorted maturation of human monocyte-derived dendritic cells and promotes their capacity to initiate T-helper 2 responses. *Human Immunology*, *69*(3), 149–157. https://doi.org/10.1016/j.humimm.2008.01.017

Vaughan WT, ark. Allergic migraine. JAMA 1927;88:1383–6. (n.d.).

Vermeer, L. M. M., Gregory, E., Winter, M. K., McCarson, K. E., & Berman, N. E. J. (2014). Exposure to bisphenol A exacerbates migraine-like behaviors in a multibehavior model of rat migraine. *Toxicological*

Sciences : An Official Journal of the Society of Toxicology, *137*(2), 416–427. https://doi.org/10.1093/toxsci/kft245

Vrieze, A., Postma, D. S., & Kerstjens, H. A. m. (2003). Perimenstrual asthma: a syndrome without known cause or cure. *The Journal of Allergy and Clinical Immunology*, *112*(2), 271–282. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/12897732

Waeber, C., & Moskowitz, M. A. (2005). Migraine as an inflammatory disorder. *Neurology*, *64*(10 Suppl 2), S9-15. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/15911785

Wauquier, A. (n.d.). Is there a common pharmacological link between migraine and epilepsy? *Functional Neurology*, *1*(4), 515–520. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/3301559

Wei, C.-C., Lin, C.-L., Shen, T.-C., & Chen, A.-C. (2018). Children with allergic diseases have an increased subsequent risk of migraine upon reaching school age. *Journal of Investigative Medicine*, jim-2018-000715. https://doi.org/10.1136/jim-2018-000715

Wilkinson, I. A., Halliday, J. A., Henry, R. L., Hankin, R. G., & Hensley, M. J. (1994). Headache and asthma. *Journal of Paediatrics and Child Health*, *30*(3), 253–256. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/8074912

Zierau, O., Zenclussen, A. C., & Jensen, F. (2012). Role of female sex hormones, estradiol and progesterone, in mast cell behavior. *Frontiers in Immunology*, *3*, 169