

Disputes & Debates: Editors' Choice

Steven Galetta, MD, FAAN, Section Editor

Editors' note: Pattern of polyphenol intake and the long-term risk of dementia in older persons

In the article "Pattern of polyphenol intake and the long-term risk of dementia in older persons," Drs. Lefèvre-Arbogast et al. found that a diet containing certain plant products (nuts, citrus, berries, leafy vegetables, soy, cereals, and olive oil) along with red wine and tea was associated with lower dementia risk in a prospective French cohort of older persons: the Three-City Study. In response and postulating about the underlying mechanisms behind the study's findings, Dr. Brenner notes that plant polyphenols have antibacterial qualities that might help reduce the risk of Alzheimer disease by inhibiting chronic bacterial infections and associated inflammation.

Aravind Ganesh, MD, and Steven Galetta, MD
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Reader response: Pattern of polyphenol intake and the long-term risk of dementia in older persons

Steven R. Brenner (St. Louis)
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I read with interest the Lefèvre-Arbogast et al.¹ article about polyphenols and reduced incidence of Alzheimer disease (AD). Chronic bacterial infections are associated with development of AD and cause inflammation through activation of innate immunity.² The increased permeability of the gut and blood–brain barrier induced by microbiota dysbiosis may mediate AD pathogenesis and other neurodegenerative disorders, especially if associated with aging.³ Toll-like receptor 4 is a host defense receptor against invading microorganisms such as bacteria, and is increased in brain tissue associated with amyloid plaque deposition.⁴ Plant polyphenols have some antibacterial qualities.⁵ Reducing the amount of gram-negative bacteria from the gastrointestinal tract and oral flora from foods containing polyphenols might reduce AD occurrence though inhibiting bacteria and other organisms such as fungi, which could contribute to development of AD.

1. Lefèvre-Arbogast S, Gadout D, Bensalem J, et al. Pattern of polyphenol intake and the long-term risk of dementia in older persons. *Neurology* 2018;90:e1979–e1988.
2. Miklossy J, McGeer PL. Common mechanisms involved in Alzheimer's disease and type 2 diabetes: a key role of chronic bacterial infection and inflammation. *Aging* 2016;8:575–588.
3. Jiang C, Li G, Huang P, Liu Z, Zhao B. The gut microbiota and Alzheimer's disease. *J Alzheimers Dis* 2017;58:1–15.
4. Walter S, Letiembre M, Liu Y, et al. Role of the toll-like receptor 4 in neuroinflammation in Alzheimer's disease. *Cell Physiol Biochem* 2007;20:947–956.
5. Taguri T, Tanaka T, Kouno I. Antibacterial spectrum of plant polyphenols and extracts depending upon hydroxyphenyl structure. *Biol Pharm Bull* 2006;29:2226–2235.

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Author disclosures are available upon request (journal@neurology.org).

Editors' note: Lymphoplasmacyte-rich meningioma involving the whole intracranial dura mater

In the article "Lymphoplasmacyte-rich meningioma involving the whole intracranial dura mater," Drs. Yang et al. reported a case of a 47-year-old woman with a lesion involving the intracranial dura mater and right trigone of the lateral ventricle, with dense lymphoplasmacytic infiltration on pathology, diagnosed as a rare type of meningioma. Drs. Fukuhara and Makifuchi present a similar case with dense lymphoplasmacytic infiltration that was diagnosed as immunoglobulin G4 (IgG4) pachymeningitis following positive IgG4 immunohistochemical staining. They raise the issue that such inflammatory lesions may be mislabeled as meningiomas with important treatment implications. In response, the authors report that they unsuccessfully tried steroid therapy for their patient. Although immunostainings did demonstrate IgG4 positivity (15 per high-powered field), they contend that this fell short of thresholds for diagnosing IgG4-related disease and that diffuse epithelial membrane antigen expression was supportive of the meningioma diagnosis.

Aravind Ganesh, MD, and Steven Galetta, MD
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Reader response: Lymphoplasmacyte-rich meningioma involving the whole intracranial dura mater

Nobuyoshi Fukuhara (Joetsu, Japan) and Takao Makifuchi (Joetsu, Japan)
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We read the article by Yang et al.¹ that reported lymphoplasmacyte-rich meningioma mimicking the whole intracranial pachymeningitis. We reported immunoglobulin G4 (IgG4) pachymeningitis in a 43-year-old woman who had a history of lymphoplasmacyte-rich meningioma resection in the right middle cranial fossa at age 17, a right orbital granuloma at age 29, and a pulmonary granuloma at age 31.² She then developed left hearing loss and a hypertrophic dura in the posterior fossa at age 35. Six years later, her MRI showed a left frontal meningioma. The biopsied sample showed dense lymphoplasmatic infiltration and IgG4 was stained immunohistochemically. Recently, pachymeningitis was found to relate to IgG4³; so the previously resected samples (meningioma, orbital granuloma, pulmonary granuloma) were restudied and showed positive IgG4 staining. Therefore, our case was a definite IgG4-related pachymeningitis and neurologic symptoms were again improved by steroid therapy. Idiopathic hypertrophic pachymeningitis and lymphoplasmacyte-rich meningioma can be confused on both imaging and histopathologic grounds.⁴ Lymphoplasmacyte-rich meningioma was occasionally reported to spontaneously regress. Its origin, whether neoplastic or inflammatory, is controversial. The case reported by Yang et al. might be IgG4-related; therefore, steroid therapy might be worth a try.

1. Yang X, Le J, Hu X, Zhang Y, Liu J. Lymphoplasmacyte-rich meningioma involving the whole intracranial dura mater. *Neurology* 2018; 90:934–935.
2. Cha YJ, Lee SK, Chang JH, Kim SH. Report of a rare case of atypical lymphoplasmacyte-rich meningioma in the tentorium mimicking idiopathic hypertrophic pachymeningitis. *Brain Tumor Pathol* 2016;33:216–221.
3. Kosakai A, Ito D, Yamada S, Ideta S, Ota Y, Suzuki N. A case of definite IgG4-related pachymeningitis. *Neurology* 2010;75:1390–1392.
4. Hosler MR, Turbin RE, Cho ES, Wolansky LJ, Frohman LP. Idiopathic hypertrophic pachymeningitis mimicking lymphoplasmacyte-rich meningioma. *J Neuroophthalmol* 2007;27:95–98.

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Author response: Lymphoplasmacyte-rich meningioma involving the whole intracranial dura mater

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After reading Drs. Fukuhara and Makifuchi's comment on our NeuroImage,¹ and more related literature,^{2–4} we agree that lymphoplasmacyte-rich meningioma mimics the whole intracranial pachymeningitis. However, we disagree with the viewpoint that lymphoplasmacyte-rich meningioma mimicking pachymeningitis is due to immunoglobulin G4 (IgG4)-related disease. The patient died during our last follow-up. The total survival time of our patient after the biopsy was about 11 months. In fact, we gave the patient steroid therapy when repeated MRI showed no progression 3 months after biopsy, which was inspired by our previous experience with the treatment of Rosai-Dorfman disease,⁵ but it was ineffective. Although no detailed serologic evaluations of immunoglobulin levels were performed, immunostainings for IgG4 for plasma cell counts demonstrated an IgG4 of 15 per high-powered field, which fell short of the diagnosis of IgG4-related disease.³ In addition, diffuse membranous epithelial membrane antigen expression highlighted the diagnosis of lymphoplasmacyte-rich meningioma.

We thank Drs. Fukuhara and Makifuchi for their letter. In the future, when we encounter similar diseases, we will assess and diagnose them more comprehensively.

1. Yang X, Le J, Hu X, Zhang Y, Liu J. Lymphoplasmacyte-rich meningioma involving the whole intracranial dura mater. *Neurology* 2018;90:934–935.
2. Cha YJ, Lee SK, Chang JH, Kim SH. Report of a rare case of atypical lymphoplasmacyte-rich meningioma in the tentorium mimicking idiopathic hypertrophic pachymeningitis. *Brain Tumor Pathol* 2016;33:216–221.
3. Kosakai A, Ito D, Yamada S, Ideta S, Ota Y, Suzuki N. A case of definite IgG4-related pachymeningitis. *Neurology* 2010;75:1390–1392.
4. Hosler MR, Turbin RE, Cho ES, Wolansky LJ, Frohman LP. Idiopathic hypertrophic pachymeningitis mimicking lymphoplasmacyte-rich meningioma. *J Neuroophthalmol* 2007;27:95–98.
5. Yang X, Liu J, Ren Y, Richard SA, Zhang Y. Isolated intracranial Rosai-Dorfman disease mimicking petroclival meningioma in a child: case report and review of the literature. *Medicine* 2017;47:e8754.

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CORRECTION

Association of peripheral blood pressure with gray matter volume in 19- to 40-year-old adults

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In the article “Association of peripheral blood pressure with gray matter volume in 19- to 40-year-old adults” by Schaare et al.,¹ first published online ahead of print January 23, 2019, in figure 3, Category 1 should be labeled “SBP < 120 mm Hg and DBP < 80 mm Hg.” In figure 4, the zero marks (gray lines) and x-axes in the forest plots should be aligned; the text should not superimpose the forest plots; and the coordinates for Right amygdala should be “24, 2, –18.” In table 3, all font sizes should be equal. Additionally, in the last data row in table 2, the parentheses should read “(SD).” The publisher regrets the errors.

Reference

1. Schaare HL, Kharabian Masouleh S, Beyer F, et al. Association of peripheral blood pressure with gray matter volume in 19- to 40-year-old adults. *Neurology* 2019;92:e758–e773.

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Association of peripheral blood pressure with gray matter volume in 19- to 40-year-old adults

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