

Nitrite, vasodilation, and headache in bacterial meningitis: Theoretical approach

Sir,

Meningitis is an important neurological disorder. Bacterial meningitis is a common type of meningitis that is considered as a serious neurological infection. Severe headache with stiff neck is an important clinical manifestation of bacterial meningitis. Basically, it is proposed that the severe headache is due to a possible stimulation of nociceptive nerve-endings in the meningeal vessel wall.^[1] However, the exact pathogenesis of the severe headache in bacterial meningitis has never been clarified. The author hereby discusses the theoretical approach to explain the ethiopathogenesis of headache in bacterial meningitis. On the basis of the basic biochemical theory, existence of bacteria in cerebrospinal fluid (CSF) results in several biochemical changes, including glucose utilization and production of nitrite.^[2] Kornelisse *et al.* reported the elevation of nitrite in the CSF of the patients with bacterial meningitis, confirming this proposed mechanism.^[3] The resulted nitrite, a potent vasodilator,^[4] will be an important factor causing generalized vasodilatation in meninges and this can finally result in severe headache. In addition, triptans have recently found a role in headache management in meningitis patients.^[5] Triptans, as a nitrite scavenger, acts at perivascular serotonin receptor, leading to vasoconstriction.^[5] The author hereby proposes a theoretical discourse that the production of nitrite bacteria might have clinical relationship to severe headache in bacterial meningitis.

Viroj Wiwanitkit

Wiwanitkit House, Bangkhae,
Bangkok, Thailand

Address for correspondence:

Prof. Viroj Wiwanitkit,
Wiwanitkit House, Bangkhae,
Bangkok, Thailand.
E-mail: wviroj@yahoo.com

References

1. Blau JN. Migraine: A vasomotor instability of the meningeal circulation. *Lancet* 1978;2:1136-9.

2. Gottschalk G. Bacterial Metabolism. Berlin: Springer, 1986.
3. Kornelisse RF, Hoekman K, Visser JJ, Hop WC, Huijmans JG, van der Straaten PJ, *et al.* The role of nitric oxide in bacterial meningitis in children. *J Infect Dis* 1996;174:120-6.
4. Lundberg JO, Weitzberg E, Gladwin MT. The nitrate-nitrite-nitric oxide pathway in physiology and therapeutics. *Nat Rev Drug Discov* 2008;7:156-67.
5. Hoffmann O, Keilwerth N, Bille MB, Reuter U, Angstwurm K, Schumann RR, *et al.* Triptans reduce the inflammatory response in bacterial meningitis. *J Cereb Blood Flow Metab* 2002;22:988-96.

Access this article online	
Quick Response Code:	Website: www.ruralneuropractice.com
	DOI: 10.4103/0976-3147.118775