OPEN ACCESS Freely available online
http://www.banglajol.info/index.php/BJID/index
Letters to Editor
Bangladesh Journal of Infectious Diseases
June 2021, Volume 8, Number 1, Page 53-54
ISSN (Online) 2411-670X
ISSN (Print) 2411-4820
DOI: https://doi.org/10.3329/bjid.v8i1.53742

Fenoldopam as a Possible Medication for Non-Occlusive Mesenteric Ischemia (NOMI) and Contrast-Induced Nephropathy?

Mirza Mehmood Ali Baig[1], Ramish Sumbal[2], Shayan Ali Irfan[3], Jawad Ahmed[4]

[1]Undergraduate Medical Student (MBBS), Dow University of Health and Science, Karachi, Pakistan; [2]Undergraduate Medical Student (MBBS), Dow University of Health and Science, Karachi, Pakistan; [3]Undergraduate Medical Student (MBBS), Dow University of Health and Science, Karachi, Pakistan; [4]Graduate (MBBS), Dow University of Health and Science, Karachi, Pakistan

To the editor,

Non-occlusive mesenteric ischemia (NOMI) is a type of mesenteric ischemia in which patency of duct is maintained; but there is decreased perfusion. It is present in about 20%-30% of all acute mesenteric ischemia[1]. The basis behind NOMI's pathophysiology shows that by preserving blood supply to viscera, perfusion in mesenteric vessels is compromised; thus, in theory, a drug that can vasodilate these vessels can play a crucial role in providing sufficient perfusion to distressed vessels[2]. Prominent animal studies have shown that Fenoldopam acts as a vasodilator and increases blood flow in mesenteric arteries[3-4].

Fenoldopam is a dopamine (DA1) receptor agonist, primarily used as an antihypertensive drug that acts on smooth vessels, causes vasodilation, and plays a pivotal role in increasing splanchnic and renal perfusion[3]. Fenoldopam alone did not show any significant isolated vasodilation, especially in the elderly (>60 years), but while working with prazosin and other vasodilators, it showed significant mesenteric vasodilatory effect[5].

Contrast-induced computed tomography (CT) scan is a gold standard to diagnose NOMI and other abdominal vessels related problems[6]. Contrast CT may lead to contrast-induced nephropathy, which generally occurs in preexisting renal function anomalies[7]. Fenoldopam can be given to patients who are at risk of contrast-induced nephropathy, like those susceptible to hypersensitivity reactions due to contrast medium used or kidneys with low glomerular filtration rate (due to decrease renal perfusion)[7]. As Fenoldopam increases renal perfusion, it helps prophylactically in contrast-induced nephropathy[7]. Therefore, when a patient is planned to undergo contrast CT for diagnosis of NOMI with risk of contrast-induced nephropathy, Fenoldopam can be given to act against NOMI and contrast-induced nephropathy, where a decrease in renal perfusion might be seen after administration of the contrast dye.

Considering the clinical urgency of NOMI and promising animal trials of Fenoldopam, it is astonishing that no clinical trials to test the therapeutic effect of Fenoldopam in NOMI and to prevent contrast-induced nephropathy, simultaneously. However, a clinical trial of Stone et al[8] showed that Fenoldopam did not help prevent contrast-induced nephropathy in patients with chronic renal insufficiency. Patients in this trial were already having renal insufficiency. So more human trials with patient population having danger of contrast-induced nephropathy but they still have a functioning kindney assorted in different age group and different regions should take place to test the effect of Fenoldopam in diagnosing NOMI, simultaneously preventing contrast-induced nephropathy.

References

1. Versyck G, de Gheldere C, Vanclooster P. Non-occlusive mesenteric ischemia: two case reports and a short review of the literature. Acta Chir Belg. 2018;118(6):392-397.
2. Al-Diery H, Phillips A, Evennett N, et al; The Pathogenesis of Nonocclusive Mesenteric Ischemia: Implications for Research and Clinical Practice. J Intensive Care Med. 2019;34(10):771-781.
3. Soares-da-Silva P. The effects of quinpirole and fenoldopam on the potassium-evoked overflow of endogenous dopamine

and noradrenaline in dog mesenteric arteries. Naunyn Schmiedebergs Arch Pharmacol. 1990;341(1-2):37-42.
4. Soares-da-Silva P. Evidence for dopaminergic co-transmission in dog mesenteric arterial vessels. Br J Pharmacol. 1988;95(1):218-24.
5. Estan L, Martinez-Mir I, Rubio E, et al; No evidence for dopamine-induced relaxation in isolated human mesenteric arterial strips from elderly patients. Gen Pharmacol. 1995;26(8):1687-94.
6. De Simone B, Ansaloni L, Sartelli M, et al; Is the risk of contrast-induced nephropathy a real contraindication to perform intravenous contrast enhanced Computed Tomography for non-traumatic acute abdomen in Emergency Surgery Department? Acta Biomed. 2018;89(9-S):158-172.
7. Ng TM, Shurmur SW, Silver M, et al; Comparison of N-acetylcysteine and fenoldopam for preventing contrast-induced nephropathy (CAFCIN). Int J Cardiol. 2006;109(3):322-8.
8. Stone GW, McCullough PA, Tumlin JA, et al; CONTRAST Investigators. Fenoldopam mesylate for the prevention of contrast-induced nephropathy: a randomized controlled trial. JAMA. 2003;290(17):2284-91.

[*Bangladesh Journal of Infectious Diseases, June 2021;8(1):53-54]*

Correspondence: Dr. Mirza Mehmood Ali Baig, Undergraduate Medical Student (MBBS), Dow University of Health and Science, Baba-E-Urdu Road, Karachi, Pakistan; **Email:** mirzamehmoodalibaig19991971@gmail.com; Cell no.: (+92)301-2316888

Conflict of interest: Authors declare that there is no conflict of interests.
How to cite this article: Baig MMA, Sumbal R, Irfan SA, Ahmed J. Fenoldopam as a Possible Medication for Non-Occlusive Mesenteric Ischemia (NOMI) and Contrast-Induced Nephropathy? Bangladesh J Infect Dis 2021;8(1):53-54