Arterial hypertension treatment

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There are anatomical and physiological evidences that the ventrolateral (VL) region of the medulla plays an important role in blood pressure regulation and that dysfunction at this level may generate hypertension (HT). Vascular compression by a megadolicho-artery from the vertebrobasilar arterial system at the root entry/exit zone (REZ) of the glossopharyngeal nerve (IXth) and vagal nerve(Xth) cranial nerves (CNs) and the adjacent VL aspect of the medulla has been postulated as a causal factor for HT from neurogenic origin. The first attempts at microvascular decompression (MVD) of the IX-Xth CNs together with the neighbouring VL brainstem was revealed promising. Established criteria for an indication of MVD as an aetiological treatment of apparent essential HT are still needed [1)].

Hypertension in stroke patients

HTN may actually be needed to maintain CBF in the face of elevated ICP, and it usually resolves spontaneously. Therefore treat HTN cautiously and slowly to avoid rapid reduction and overshooting the target. Avoid treating mild HTN. Indications to treat HTN emergently include:

1. acute LV failure (rare)

2. acute aortic dissection (rare)

3. acute hypertensive renal failure (rare)

4. neurologic complications of HTN

a) hypertensive encephalopathy

b) conversion of a large pale (ischemic) infarct into a hemorrhagic infarct

c) patients with ICH; some HTN is needed to maintain CBF

Guidelines

In 2017 the American College of Cardiology and American Heart Association (ACC/AHA) were the first to do so [2], followed by the European Society of Cardiology and European Society of Hypertension (ESC/ESH) in 2018 [3], and most recently the National Institute for Health and Care Excellence (NICE), who published their 'Hypertension in Adults' guideline in August 2019 [4]

Drugs

Angiotensin-converting enzyme inhibitor

Angiotensin-converting enzyme inhibitor.

Angiotensin II receptor blocker

Angiotensin II receptor blocker.

Beta blocker

Beta blocker

Calcium channel blocker

Calcium channel blocker.

Diuretics

Diuretics

To treat hypertension patients with COVID-19 caused pneumonia, anti-hypertensive drugs (ACEs and ARBs) may be used according to the relative guidelines. The treatment regimen with these drugs does not need to be altered for the COVID-19 patients [5].

Parenteral agents

General Neurocritical Care parenteral agents for hypertension:

Nicardipine

Clevidipine

Nitroglycerin

Labetalol

Enalaprilat

Esmolol

Fenoldopam

Propranolol

1)
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2)
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3)
Williams B, Mancia G, Spiering W, Agabiti Rosei E, Azizi M, Burnier M, Clement DL, Coca A, de Simone G, Dominiczak A, Kahan T, Mahfoud F, Redon J, Ruilope L, Zanchetti A, Kerins M, Kjeldsen SE, Kreutz R, Laurent S, Lip GYH, McManus R, Narkiewicz K, Ruschitzka F, Schmieder RE, Shlyakhto E, Tsioufis C, Aboyans V, Desormais I; ESC Scientific Document Group. 2018 ESC/ESH Guidelines for the management of arterial hypertension. Eur Heart J. 2018 Sep 1;39(33):3021-3104. doi: 10.1093/eurheartj/ehy339. Erratum in: Eur Heart J. 2019 Feb 1;40(5):475. PMID: 30165516.
4)
National Institute for Health and Care Excellence. Hypertension in adults: diagnosis and management. NICE Guideline 136. August, 2019. https://www.nice.org.uk/guidance/ng136.
5)
Wang W, Zhao X, Wei W, Fan W, Gao K, He S, Zhuang X. Angiotensin-converting enzyme inhibitors (ACEI) or angiotensin receptor blockers (ARBs) may be safe for COVID-19 patients. BMC Infect Dis. 2021 Jan 25;21(1):114. doi: 10.1186/s12879-021-05821-5. PMID: 33494713.