

Blood pressure management recommendation for patients with novel coronavirus pneumonia

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Abstract

It is likely that the pathogenesis of the novel coronavirus pneumonia (COVID-19) is initiated by the coupling of the infecting virus with ACE2 (angiotensin-converting enzyme 2) and its internalization into the cells of the human respiratory tract and lungs etc. ACE2 level can be increased by the use of angiotensin II receptor blockers (ARB) that increases chance of the novel coronavirus infection. Angiotensin-converting enzyme inhibitors (ACEi) can increase bradykinin that causes angioedema via bradykinin B2 (BK2) receptor. There are pathological changes of angioneurotic pulmonary edema in autopsy of COVID-19. Among the previously reported death cases, about 60% were hypertensives. To reduce disease severity and mortality, we suggest that patients with COVID-19 and hypertension who are taking an ACE inhibitor or angiotensin II receptor blockers (ARB) should switch to direct renin inhibitor aliskiren and or calcium channel blockers (CCB) etc. COVID-19 with acute respiratory distress syndrome (ARDS) should give BK2 receptor antagonist icatibant.

It is likely that the pathogenesis of the novel coronavirus pneumonia (COVID-19) is initiated by the coupling of the infecting virus with ACE2 (angiotensin-converting enzyme 2) and its internalization into the cells of the human respiratory tract and lungs etc¹. Among the previously reported death cases, about 60% were hypertensives². Professor Lisheng LIU, the former president of the World Hypertension League and lifetime honorary president of the Chinese Hypertension League, pays great attention to the treatment of patients with COVID-19 and hypertension. Professor LIU has thoroughly discussed with hypertension experts in China and abroad, especially with the Swiss professor Juerg Nussberger³ who had discovered the direct renin inhibitor aliskiren⁴⁻⁵ and also introduced the new concept using the bradykinin B2 (BK2) receptor antagonist icatibant⁶⁻⁷ to stop angioedema. After repeated discussion, the following suggestions are made:

1. Hypertensive patients with mild COVID-19 should consider stopping angiotensin-converting enzyme inhibitors (ACEi), angiotensin II receptor blockers (ARB), and diuretics, and switch to calcium channel blockers (CCB).
2. Hypertensive patients with severe COVID-19 should immediately stop ACEi and ARB, and switch to direct renin inhibitor aliskiren and/or CCB, and eventually add diuretics with caution.
3. In critical patients with COVID-19 complicated by acute respiratory distress syndrome (ARDS) or neurovascular edema (angioedema), it is recommended that first-line doctors choose the appropriate case to use the BK2 receptor antagonist icatibant. According to the autopsy results of COVID-19, there are pathological changes of angioneurotic pulmonary edema⁸⁻⁹.
4. Direct renin inhibitor aliskiren, dosage and usage: 150-300 mg, orally, once a day.
5. Antihypertensive drugs should be discontinued in patients with COVID-19 if blood pressure falls below 110/70 mmHg.
6. Hypertensive patients without COVID-19 should strengthen family self-blood pressure monitoring and continue to take medication according to the doctor's advice. Do not change the original treatment plan or stop taking antihypertensive drugs.

The above suggestions provide a reference for first-line doctors.

References

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附件：新冠肺炎患者的血压管理建议

现在已知，新型冠状病毒肺炎(新冠肺炎)的发病机制，很可能是感染的病毒与人呼吸道和肺组织的 ACE2(血管紧张素转换酶 2)相结合后，导致的一系列瀑布反应。前期报道死亡的新冠肺炎病例中合并有高血压者达到 60.9%。世界高血压联盟前主席、中国高血压联盟终身名誉主席刘力生教授非常关注新冠肺炎高血压患者的治疗，多次与国内外高血压专家，特别是与直接肾素抑制剂发明人、缓激肽 BK2 受体阻断剂创始人之一的瑞士 Juerg Nussberger 教授等反复讨论后提出如下建议：

- 1、轻型普通新冠肺炎合并高血压患者，考虑停用血管紧张素转换酶抑制剂 (ACEI)、血管紧张素 II 受体拮抗剂 (ARB)和利尿剂，改用钙离子通道拮抗剂 (CCB)。
- 2、重症新冠肺炎合并高血压患者，应立即停用 ACEI 、ARB 和慎用利尿剂，改用直接肾素抑制剂阿利吉仑 (aliskiren)和/或 CCB。
- 3、危重型新冠肺炎患者合并呼吸窘迫或神经血管性水肿时，建议一线医生选择合适病例使用缓激肽 (Bradykinin, BK2) 受体阻断剂 Icatibant。
- 4、直接肾素抑制剂阿利吉仑，服药剂量与用法 :150-300 mg，口服，每日 1 次。
- 5、已发生低血压的新冠肺炎高血压患者应停用降血压药物。
- 6、非新冠肺炎的其他高血压患者应加强家庭自我血压监测，按医嘱在医生指导下继续服药，不要随意改变原有治疗方案或停用降压药物。

以上建议提供一线医生参考。

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