Use of Antihypertensive Drugs in an Intensive Care Unit

Intensive care medicine is mainly perceived as the management of critically ill and injured patients with the substantial use of drugs and high technology to support failing organs. However, high blood pressure (BP) is frequently encountered in patients hospitalized in the intensive care unit (ICU), mostly during the early postoperative period. Indeed, many patients are admitted in the ICU for observation and recovery after elective surgery, and frequently develop high BP despite adequate analgesia and pulmonary gas exchange.\(^{3}\)

Arterial hypertension is common after cardiac surgery, vascular surgery (of the aorta or the carotid arteries) and neurosurgery, and occurs mainly in previously hypertensive patients.\(^{1}\) Whatever the type of surgery, potential hazards of postoperative hypertension include increase in myocardial oxygen consumption resulting in myocardial ischemia, cerebrovascular accidents, and suture line rupture. Control of BP is therefore advocated during the postoperative period.\(^{1}\) On the other hand, overzealous treatment of acute hypertension carries the potential risk of myocardial, cerebral, and renal ischemia, especially in previously hypertensive patients with rightward shifts of their autoregulation curves.\(^{2,3}\) Although the clinical benefit of treating accelerated malignant hypertension is well documented, that of immediately treating less dramatic and sometimes transitory increases in BP is largely unknown.\(^{2,3}\)

We are not aware of any report on the frequency of antihypertensive drug administration in the ICU, indications for antihypertensive therapy and target BP. Therefore, we evaluated the use of antihypertensive drugs in a 29-bed medicosurgical ICU (distinct from the coronary care unit) of a university teaching hospital. During two separate 3-week periods, among the 300 patients who were admitted in the ICU (142 after elective surgery and 158 for acute diseases), 153 (51%, 105 men, mean age 64 years, range 20 to 91 years) received at least one antihypertensive drug. During the same periods, 74 patients (25%) received catecholamines for circulatory shock or severe heart failure.

As expected, indications for antihypertensive drugs were mainly postoperative hypertensive (n = 111), such as after cardiac surgery (n = 54, including coronary artery bypass surgery n = 36), neurosurgery (n = 22) or vascular surgery (n = 16). Other indications (n = 42) were mostly acute neurologic disorders (subarachnoid hemorrhage, stroke, or cranial trauma, n = 24). There were 243 drug interventions for high BP, including oral or ‘bite and swallow’ nifedipine (n = 64), intravenous sodium nitroprusside (n = 63), intravenous or oral labetalol (n = 40), oral captopril (n = 28), and other antihypertensives (n = 48). Sodium nitroprusside was predominantly used after cardiac surgery, and labetalol after neurologic surgery or damage.

Therapies for antihypertensive therapy were a systolic BP >140 mm Hg after coronary artery bypass surgery, a systolic BP >120 mm Hg after aortic valve replacement, or a mean BP >120 mm Hg after neurologic surgery or diseases. For other indications, thresholds for antihypertensive intervention were less systematic and sometimes largely varied, depending on the attending physician.

In conclusion, antihypertensive drugs are frequently used in a medicosurgical ICU. In this ICU, half of the patients were administered antihypertensive therapy. Thresholds for antihypertensive therapy vary widely according to the underlying condition. The message is that the ICU is a suitable field where important but still unresolved issues can be addressed: according to the underlying condition associated with the acute increase in BP, what is the optimal target BP to beneficially affect clinical end-points such as survival, length of stay in the ICU, need for blood transfusion, or for reintervention due to excessive bleeding, neurological outcome, or cardiac or renal function?

REFERENCES

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