

Comparison of Dopamine and Norepinephrine in the treatment of shock

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Circulatory shock is a life-threatening condition, associated with high mortality. Treatment includes administration of fluids and very often of adrenergic agents. Among these, dopamine and norepinephrine are the most frequently used.

The present study was designated to evaluate whether the choice of norepinephrine over dopamine as first intention vasopressor could reduce the rate of death in patients with shock. □

METHODS

This was a multicenter, randomized trial, with duration of 4 years, which included 1679 patients, who were assigned to either dopamine or norepinephrine as first line therapy to restore and maintain blood pressure. The patients were considered to be in shock if the mean arterial pressure was lower than 70 mm Hg or the systolic blood pressure was lower than 100 mm Hg, despite the fact that an adequate amount of fluids had been administered. In cases in which blood pressure couldn't be maintained using 20 µg/kg/minute for dopamine or 0.19 µg/kg/minute for norepinephrine,

open-label norepinephrine, epinephrine or vasopressin were added. Primary outcome was the rate of death 28 days after randomization and secondary outcomes were the number of days without need for organ support and the occurrence of adverse events. □

RESULTS

858 patients were assigned to dopamine and 821 to norepinephrine. The baseline characteristics of the 2 study groups were similar. There was no statistical significant difference regarding the primary outcome in the 2 groups (dopamine group 52.5%; norepinephrine group: 48.5%). Patients treated with dopamine had more arrhythmic events (207 events vs. 102 events in the norepinephrine group). More patients in the dopamine group needed open label norepinephrine during treatment, but doses of open label norepinephrine were similar in the 2 groups. The use of epinephrine and vasopressin was similar in the 2 study groups.

A subgroup analysis showed that dopamine was associated with a higher rate of death at 28 days in patients with cardiogenic shock, but not in patients with septic or hypovolemic shock. □

LIMITATIONS OF THE STUDY

1. Dopamine is a less potent vasopresor than norepinephrine;
2. Sequential design of the study (used for a potential early stop of the study if an effect larger than expected from observational trials occurred). ❑

CONCLUSION

Although the rate of death didn't differ between patients treated with dopamine and norepinephrine, dopamine was associated with more arrhythmic events, raising logical concerns about the safety of dopamine therapy. ❑



Comment on a paper:

D De Backer, P Biston, J Devriendt et al – Comparison of Dopamine and Norepinephrine in the Treatment of Shock, New England. *Journal of Medicine* 2010; 362: 779-789