

心房細動に対するボツリヌス毒素(2017 AHA, Session LBS.07)

TNT-POAF: 心外膜へのボツリヌス毒素注入は術後心房細動を減少させる可能性がある

TNT-POAF: Epicardial botulinum toxin may reduce postoperative atrial fibrillation

心臓手術後心房細動(POAF)の予防目的での心外膜ボツリヌス毒素治療はPOAFリスクを数字上低下させたが、この差は統計学的有意差には到達しなかった、と2017 American Heart Association Scientific Sessions で発表された。心外膜脂肪層の心臓自律神経近くに注入すると、ボツリヌス毒素は心房に抗コリン的に作用し、心房の有効不応期を短縮LAF誘発を阻害する。ボツリヌス毒素を注入された患者のうち、36.5%がPOAFを発症したのに対し、プラセボ注入群では47.8%であった($p=0.19$)。入院期間または術後合併症に有意差はなかった。

Full Text

Epicardial botulinum toxin treatment to prevent postoperative atrial fibrillation (POAF) after cardiac surgery was associated with a numerically lower risk of POAF, though this difference did not reach statistical significance according to researchers at the 2017 American Heart Association Scientific Sessions.

From temporarily softening wrinkles to easing migraines, botulinum toxin has become a versatile medical remedy because of its ability to block nerve signals that can become bothersome or risky. But could the toxin also quell atrial fibrillation after cardiac surgery?

Researchers in Duke's Department of Anesthesiology and the Duke Clinical Research Institute launched their inquiry after a study from Russian scientists reported a 70-percent drop in atrial fibrillation (AF) episodes among a small cohort of heart surgery patients who were treated with strategic injections of botulinum toxin.

"The results from Russia were very interesting, but needed to be replicated on a larger and more medically complex group of patients," said lead author and Duke anesthesiologist Nathan Waldron, M.D.

Bouts of POAF are a common complication after cardiac surgery, affecting up to 40 percent of patients and increasing the risk of stroke and death. When injected near cardiac autonomic nerves in epicardial fat pads, botulinum toxin acts in an anticholinergic fashion on the atrium, shortening atrial effective refractory periods and blocking induction of AF.

Waldron and colleagues enrolled 130 patients who were slated to undergo a coronary artery bypass grafting procedure, valve surgery, or both. During their surgeries, roughly half the patients were randomly assigned to receive shots of botulinum toxin in the fat pads around their heart – where the fibrillation is known to arise; the other half received harmless saline. The medical teams did not know which injection the patients received.

Afterward, the patients were monitored continuously by electrocardiogram to pick up signs of POAF. Among the patients who received injections of botulinum toxin, 36.5 percent had POAF, compared to 47.8 percent of those who had the saline placebo.

The researchers also found that patients who received the botulinum toxin had shorter initial bouts of POAF, but the treatment was not associated with an increase in adverse events, duration of postoperative mechanical ventilation, or length of stay compared to placebo.

"Unfortunately, while there was a numerically lower risk of atrial fibrillation among the Botox patients, it did not meet statistical significance," said Jonathan P. Piccini, M.D., a member of DCRI and senior author of the study. "What we observed was a modest positive effect on preventing atrial fibrillation, so a larger trial is something that is needed to provide a clearer picture."

While this trial failed to meet the primary endpoint of increased time to first episode of POAF, these data indicate that epicardial botulinum may be a viable strategy to prevent postoperative atrial fibrillation and should be studied in a larger-scale trial.

The study received funding from the American Heart Association and the Foundation for Anesthesia Education and Research.

In addition to Waldron and Piccini, study authors include Mary Cooter, John C. Haney, Jacob N. Schroder, Carmelo A. Milano and Joseph P. Mathew.

Cardiology特集

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