Available online at www.sciencedirect.com

ScienceDirect

journal homepage: www.JournalofSurgicalResearch.com

Association for Academic Surgery

Effects of statins on ischemia–reperfusion complications in breast free flaps

*Pieter G.L. Koolen, MD,[1] John T. Nguyen, MD,[1] Ahmed M.S. Ibrahim, MD, Oren Ganor, MD, Danielle J. Chuang, Samuel J. Lin, MD, and Bernard T. Lee, MD, MBA**

Division of Plastic and Reconstructive Surgery, Department of Surgery, Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, Massachusetts

ARTICLE INFO

Article history:
Received 30 December 2013
Received in revised form
1 February 2014
Accepted 11 February 2014
Available online 15 February 2014

Keywords:
Statins
Ischemia–reperfusion injury
DIEP
Breast reconstruction
Reconstructive surgery

ABSTRACT

Background: Administration of statins or other cardiovascular medications (CVMs) could potentially protect against the development of ischemia–reperfusion (I/R) injury in free flap reconstruction. The aim of this study was to examine whether the use of statins and other CVMs decreased the rate of I/R injury in autologous free flap breast reconstruction.

Methods: Retrospective chart review was performed on women who had undergone mastectomy and autologous free flap breast reconstruction between 2004 and 2010. Patient characteristics, use of statin and/or CVMs, and I/R–related complications were ascertained. Multivariable logistic regression was used to identify associations between independent risk factors and specific complications.

Results: There were 702 free flap breast reconstructions included in this study; 45 performed in patients on statins, 70 in patients on CVMs, and 38 in patients on both. Overall complication rate in patients on statins and patients on CVMs was significantly higher than those not on any medication (46.7% *versus* 31.5%, $P = 0.037$ and 45.7% *versus* 31.5%, $P = 0.017$, respectively). When I/R complications were pooled, there were no significant differences between patients not on any medications and those on statins ($P = 0.26$), CVMs ($P = 0.18$), and both ($P = 0.83$.)

Conclusions: Although there may be theoretical pharmacologic benefits of statins and/or CVMs to reduce the incidence of IR injury in autologous free flap breast reconstruction, the results of this study showed no clear advantages when these drugs were used.

1. Introduction

Over the past several years, microvascular free tissue transfer has become more common in reconstructive surgery [1]. Although recent reports have indicated a trend toward implant-based procedures for postmastectomy breast reconstruction, advances in microsurgical techniques have continued to evolve, permitting the creation of a soft, naturally ptotic breast mound with autologous tissue [2,3]. Significant questions have been raised regarding hemodynamic causes of free flap failure. During the process of microsurgical free flap reconstruction, the flap undergoes an initial period of

* *Corresponding author*. Division of Plastic and Reconstructive Surgery, Department of Surgery, Beth Israel Deaconess Medical Center, Harvard Medical School, 110 Francis St. Suite 5A, Boston, MA 02215. Tel.: +1 617 632 7835; fax: +1 617 632 7840.
E-mail address: blee3@bidmc.harvard.edu (B.T. Lee).
[1] Cofirst authors.
0022-4804/$ – see front matter © 2014 Elsevier Inc. All rights reserved.
http://dx.doi.org/10.1016/j.jss.2014.02.017