The septal mucosa decongests with naphazoline: a study of mucosal dynamics with sonography

Abel-Jan Tasman, A Soor, M Zaiss & H Weidauer

A new method using B-mode and power-Doppler-mode (pD) sonography for the investigation of changes in nasal mucosa swelling and perfusion was developed. The effect of naphazoline (0.25 mg/mL) on the nasal mucosa was visualized and recorded in 1-minute intervals in 40 patients. The effect of normal saline solution was studied in 27 healthy volunteers. The decongestant and normal saline were applied by flooding the anterior nasal cavity. A computer program automatically quantified pD color information. Normal saline solution induced a 4.8 +/- 2.4% increase in perfusion (+/- SEM, n.s.) after 5 minutes. In the naphazoline group, changes in stereometry were measured on B-mode-sequences in 24 (60%) and perfusion changes in 24 participants (60%). In 16 of 40 patients (40%), both stereometry and perfusion were analyzed. After 10 minutes, the septum and inferior turbinate mucosa thickness were reduced by 17 +/- 2.8% (p < 0.001) and 25 +/- 2.6% (p < 0.001). Perfusion of the septum and inferior turbinate mucosa as visualized with pD-sonography decreased by 33 +/- 3.3% (p < 0.001). The reduction of bloodflow induced by naphazoline as visualized with pD-sonography is within the range of perfusion changes found in LDF and Xenon clearance studies. Decongestion of the septum mucosa demonstrates erectile properties of the septum, which may contribute to the increase of nasal patency after nasal decongestion.