WEIGHT LOSS, SALINE LOADING, AND THE NATRIURETIC PEPTIDE SYSTEM

Poster Contributions
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Background: In epidemiologic studies, obesity has been associated with reduced natriuretic peptide (NP) concentrations leading to the hypothesis that obesity is a state of relative "NP deficiency". However, data from prior studies have been restricted to resting NP concentrations, which may not reflect how the NP system responds to salt loading.

Methods: We enrolled 15 healthy, obese individuals (mean BMI 45±5.4 kg/m2) undergoing gastric bypass surgery. Before and 6 months after the surgery, subjects were admitted and administered a large-volume saline challenge indexed to the body surface area. Serial blood sampling for NP concentrations and echocardiography were performed.

Results: From baseline to 6 months after surgery, subjects had a mean decrease of 27% in the body mass index. At the post-surgical visit, circulating N-terminal pro-ANP levels were approximately 40% higher before, during, and after the saline infusion, compared with levels measured during the pre-operative visit in the same subjects (Figure, p<0.001). The rise in N-terminal pro-ANP induced by the saline infusion (approximately 50%) was similar both before and after surgery (p<0.001 for effect of saline; p=0.2 for interaction). Similar results were obtained with ANP, BNP, and N-terminal pro-BNP.

Conclusion: Weight loss is associated with a substantial increase in the “setpoint” of circulating NP concentrations in obese individuals. Higher absolute NP concentrations could contribute to enhanced ability to handle salt loads.