Abstract #2702

COMPARISON OF SOLUBLE LATANOPROST AND KYBELLA FOR NONINVASIVE ADIPOSE VOLUME REDUCTION

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BACKGROUND: Autologous facial fat grafting is an increasingly common procedure used alone or in combination with rhytidectomy for facial rejuvenation. However, there is increasing incidence of graft revision procedures required to correct defects caused by fat aging or expansion that is different from the native facial fat pads. While mini-liposuction can be used for fat graft revision, many patients are not good candidates for revision or elect to avoid secondary surgical procedures. Therefore, injectable solutions to reduce facial fat deposits would be a valuable secondary option clinicians could utilize. Currently, the only such option is Kybella (deoxycholic acid), an FDA approved cytolytic drug used to reduce submental fat. However, Kybella has many known adverse effects such as injection site ulceration, necrosis and alopecia, and induction of dysphagia. In this study, we investigated the use of an alternative known cytolytic agent, latanoprost, a prostaglandin F2α analogue, as a potential alternative for small volume fat pad reduction.

METHODS: Lipoaspirate obtained under IRB exemption was incubated in vitro with increasing concentrations of latanoprost or Kybella for 2 weeks (6 unique adipose donors), after which tissue parcels were enzymaticlly digested. Stromal cells and adipocytes were separated using centrifugation and cell size and frequency were quantified using a Cellometer. in vivo, single administration of Kybella (500µl) or latanoprost (1.5mcg and 150mcg) were injected directly into C57bl/6 mouse inguinal fat pads and mice were sacrificed at one and two weeks. Study outcomes included mouse weight, inguinal fat pad volume, adipose stromal cell concentration and tissue architecture.

RESULTS: Incubation of lipoaspirate with Kybella resulted in total tissue dissolution and loss of viability. In contrast, latanoprost significantly decreased stromal cell frequency but did not negatively affect viability of stromal cells or adipocytes. Interestingly, latanoprost significantly increased adipocyte frequency, possibly indicating stem cell differentiation and exhaustion. In vitro, Kybella significantly decreased inguinal fat pad volume as expected, but also resulted in dermal lesions. In contrast, latanoprost (150mcg) also significantly reduced fat pad volume and histologic evaluation showed limited evidence of inflammation.

CONCLUSIONS: Our study showed that while Kybella significantly reduced inguinal fat pad volume as expected, single administration of soluble latanoprost safely reduced adipose stromal cell frequency and reduced fat pad volume at two weeks post injection. Therefore, latanoprost has potential applications in reducing small fat volumes without inducing cell lysis and incurring associated inflammation.