HIGH DOSE TISSUE PLASMINOGEN ACTIVATOR (TPA) (100 MCG/0.1 ML) AND C3F8 GAS IN PNEUMATIC DISPLACEMENT OF SUBMACULAR HAEMORRHAGE.

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BACKGROUND

  - Removing subretinal scars or haemorrhage was possible but can be associated with recurrent retinal detachment associated with large retinotomies.
BACKGROUND

  • Surgical removal of large subretinal haemorrhages is technically feasible, but visual recovery is limited.
  • tPA may be a useful adjunct in managing selected cases of subretinal haemorrhage.

- Severe outer retinal degeneration was evident in cat model by day 14 in all of the untreated subretinal haemorrhages.
- Outer retinal architecture was better preserved in the eyes that underwent tPA-assisted removal of their subretinal haemorrhage on day 7.
BACKGROUND

  • Vitrectomy with subretinal injection of tPA was more effective in terms of displacement of subfoveal haemorrhage.
  • Subretinal tPA injection had greater incidence of retinal detachment, vitreous haemorrhage and recurrence of submacular haemorrhage.
BACKGROUND

• Comparison of pneumatic displacement of submacular haemorrhages with gas alone and gas (C3F8) plus tPA 25 mcg. Fujikawa et al, 2013.
  • 54% in the gas group and 40% in the gas plus tPA group had best corrected V/A improvements at 1 month.
  • No adjuvant or adverse reactions of tPA were found.
- Use of 30-100 mcg of tPA.

Intravitreal recombinant tPA without and with additional gas injection in patients with submacular haemorrhage associated with age-related macular degeneration. Tsymanava et al, 2012.
- Use of tPA 50 mcg versus 100 mcg versus 200 mcg.
INCLUSION CRITERIA

- Subretinal haemorrhage < 2 week duration.
- V/A (if known) prior to subretinal haemorrhage better than or equal to 6/60
- Subretinal haemorrhage > 1 disc area but < 10 disc areas
- Center of fovea involved.
- Patient able to lie supine and prone.
EXCLUSION CRITERIA

• Visible disciform scar involving center of fovea.
• Visible RPE tear (before the subretinal haemorrhage was displaced) involving center of fovea.
METHODS

- Prospective case series with at least 6 months follow up.
- Patient treated concurrently with interval (4-6 weeks) intravitreal injections of anti-VEGF agent: bevacizumab, ranibizumab, or aflibercept.
- Central foveal thickness at initial visit assessed by HD-OCT.
METHODS

- Patient prepped with periocular and topical betadine.
- Paracentesis performed.
- 100 mcg/0.1 mL of tPA injected into vitreous cavity.
- 0.5 cc of C3F8 injected into vitreous cavity.
- Central retinal artery perfused verified (ophthalmoscopy) following procedure.
METHODS

• Visual Acuities of Counting Fingers, Hand Motion and Light Perception and No Light Perception were quantified in logMAR units according to:
## METHODS

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<tr>
<th>Snellen Visual Acuity</th>
<th>logMAR Visual Acuity</th>
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RESULTS

• 50 patients with 50 eyes were enrolled.
• 20 patients were excluded from final analysis due to:
  • 12 did not achieve 6 months follow up.
  • 2 had scars involving the fovea.
  • 1 had a haemorrhage involving > 10 disc areas.
  • 1 had haemorrhage that was < 1 disc area.
  • 3 had haemorrhage not involving fovea.
  • 1 was missing initial photos.
RESULTS

• Of the 30 patients who satisfied the 6 month follow up:
  • 60% (18) were female.
  • 40% (12) were male.
RESULTS

- Of the 30 patients:
  - 10% (3) had a macroaneurysm.
  - 90% (27) had exudative macular degeneration.
  - 0% (0) had myopic choroidal neovascularization or histoplasmosis related choroidal neovascularization.
RESULTS

- Of the 30 patients:
  - 57% (17) had a substantial improvement in visual acuity.
  - 40% (12) had little improvement in visual acuity.
  - 3% (1) had a severe deterioration in visual acuity.
RESULTS

- Of the 30 patients:
  - 10% (3) patients developed persistent vitreous haemorrhages that required vitrectomy surgery.
  - 1 patient developed an endophthalmitis (3 months after TPA).
  - 1 developed a massive enlargement of the submacular haemorrhage at 1 month with eventual NLP.
  - 0 patient developed a retinal detachment.
RESULTS

Initial VA vs Final VA of Submacular Hemorrhage Patients

Visual Acuity at 6 months

Initial Visual Acuity
RESULTS

1) There was a significant improvement (p<0.05) in the visual acuity after 6 months (paired sample 2 tailed T-test, repeated measures multivariate test).

2) Age did not affect the visual acuity improvement (within subjects design, multivariate test, p=0.43).
RESULTS

3) Foveal thickness did not affect the visual acuity improvement (within subjects design, multivariate test, p=0.21).

4) Phakic versus Pseudophakic status did not affect the visual acuity improvement (within subjects and between subjects design, multivariate test, p=0.71).
CONCLUSIONS

- Pneumatic displacement, as an in-office procedure, with high dose tPA and C3F8 combined with continued interval anti-VEGF therapy, is feasible and can be highly successful in the management of submacular haemorrhage.
• Management of submacular haemorrhage secondary to neovascular age-related macular degeneration with anti-vascular endothelial growth factor monotherapy. Shienbaum et al, 2013.
  • Mean increase in ETDRS letters was 12 letters at 3 months and 18 letters at 6 months.