Title: 5-Flourouracil for the Treatment of Corneal Intraepithelial Neoplasia

Abstract: Evaluation and treatment of corneal intraepithelial neoplasia, in absence of conjunctival neoplasia, using topical chemotherapeutic agent 5-fluorouracil

I. Case History: February 4th, 2016 Initial presentation of symptoms
- Patient demographics: 96 year old white male
- Presents for yearly comprehensive eye examination
- Chief complaint: Gradual decrease in vision OD>OS over the past year
- Ocular History
  - Fuchs Endothelial Dystrophy OU
  - Dry Eye Syndrome OU
  - Ectropion OU
  - Pseudophakia OU
  - Mild Macular Pigment Changes OS>OD
- Medical History
  - Hyperlipidemia
  - Hypertension
  - History of Carcinoma of Left Ear
  - Gastroesophageal Reflux Disease
  - Impaired Fasting Glucose
  - Peripheral Neuropathy
  - Atrial Flutter
  - Vitamin D Deficiency
  - History of multiple fractures and joint pain
  - Kidney Disease
  - Syncope
  - Pulmonary Embolism
  - Asbestosis
  - Benign Prostatic Hyperplasia
  - Ventricular Premature Beats
  - Sensorineural Hearing Loss
  - Degeneration of Intervertebral Discs
  - Anemia
  - Osteopenia
  - Abnormal Aortic Aneurysm
- Medications
  - Lisinopril 2.5mg QAM
  - Omeprazole 200mg QAM
  - Gemfibrozil 600mg BID
  - Metoprolol Tartrate 12.5mg BID
  - Alfuzosin Hcl 10mg QD
- Warfarin 3mg QD
- Triamcinolone Acetonide Cream BID
- Polyethylene Glycol 17mg QAM
- Cholecalciferol QAM
- Aspirin 81mg QAM
- Glucosamine 500mg BID
- Multivitamin QAM
- Omega-3 QAM
- Acetaminophen 500mg BID
- Magnesium 200mg QAM
- Ascorbic Acid 500mg QAM
- Vitamin E QAM
- Chondroitin 1200mg QAM

- Allergies
  - Sulindac

- Social History
  - Non-Smoker
  - Not driving

II. Pertinent Findings
- Clinical Findings: February 4th, 2016
  - Entrance Testing
    - Visual Acuity
      - OD: -1.50 +1.00 x 173 20/60+2 PHNI
      - OS: -1.00 +2.25 x 123 20/50-1 PHNI
    - CVF: Full to Finger Count OD and OS
    - EOMs: Full, no restrictions OD and OS
    - Pupils: PERRL (-) APD
  - Anterior Segment
    - Lids/Lashes: Dermatochalasis, ectropion, and blepharitis OU
    - Sclera/Conjunctiva: Small hyaline plaques with mild pinguecula OU
    - Cornea: Large 3+ gathering of SPK denser temporally OD extending across visual axis and tapering off nasally, 1+ SPK OS inferiorly, arcus 360 OU, limbal girdle temporally OU, CE scarring OU, 1+ guttata OU
    - Anterior Chamber: Deep and quiet
    - Iris: Flat and avascular
    - Lens: Clear, centered PCIOL OU
  - Goldmann Tonometry: at 08:31 AM
    - OD: 18mmHg
    - OS: 17mmHg
  - Posterior Segment
    - Dilated with 1% Tropicamide and 2.5% Phenylephrine at 08:34AM
    - Difficult views OD>OS due to corneal haze
    - ONH: Distinct margins, no pallor OU
    - CD Ratio: 0.25/0.25 round OU
    - Macula: Mild pigmentary changes OU, no edema OU
    - AV ratio: 2/3 OU
    - Posterior Pole: Clear OU
    - Vitreous: Floaters OU
III. Differential Diagnosis
- Primary/Leading
  - Ocular Surface Squamous Neoplasia
  - Dry Eye Disease
  - Superficial Punctate Keratitis
  - Pannus
- Secondary
  - Anterior Corneal Dystrophies
  - Band Keratopathy

IV. Diagnosis and Discussion
- Ocular Surface Squamous Neoplasia is an umbrella term that encompasses a variety of epithelial abnormalities including conjunctival and corneal intraepithelial neoplasia (CIN), squamous cell carcinoma, and squamous dysplasia.
- Conjunctival intraepithelial neoplasia is the most common conjunctival malignancy in the United States. In many instances CIN extends from the conjunctiva to the cornea but it is extremely rare to have solely corneal intraepithelial neoplasia.
- CIN is a precancerous lesion of the ocular surface which is slowly progressive but a precursor to squamous cell carcinoma which invades the basement membrane into deeper layers of the cornea.
- Risk factors linked to pathogenesis of CIN include age, UV light exposure, cigarette smoking and immunosuppression.
- Using anterior segment OCT and corneal and conjunctival biopsy, this patient was diagnosed with corneal intraepithelial neoplasia with no conjunctival abnormalities.

V. Treatment and Management
- Corneal and conjunctival biopsy to determine etiology.
- In the past CIN was commonly treated using wide excision of lesion combined with cryotherapy but more recently use of topical ophthalmic chemotherapeutic agents (ex: mitomycin C, 5-fluorouracil, interferon alpha-2b) provide a less invasive but successful alternative treatment.
- In this case, treatment included rounds of 1% 5-Fluorouracil topical therapy.
- Patients should be closely monitored with routine follow up visits.

VI. Conclusion
- Early detection and treatment of rare presentation of CIN with corneal only findings, can reduce symptoms and prevent progression or metastasis of lesions.

References:


