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OPHTHALMOLOGY

SSC 5C: Elective Report

What are the prevalent ophthalmic conditions in New Orleans?

The eye conditions encountered in New Orleans are very similar to those encountered in the U.K. These included cataracts, glaucoma, age related macular degeneration and diabetic retinopathy. Unfortunately, these conditions may progress rapidly without symptoms, leading to significant visual loss. Many patients therefore presented at Tulane Hospital with fairly advanced eye disease. In paediatric patients, strabismus was a common presenting condition.

How are ophthalmic health services organised and delivered? How does this differ from the U.K.?

The U.K. operates a government-funded healthcare system, where appointments and treatments are free and prescriptions are either free or of comparatively low cost. This is in comparison to the U.S. healthcare system, which is relatively complex and operates through multiple insurance companies. These companies provide different levels of healthcare and therefore vary in their cost. There are however some mechanisms in place for those who cannot afford health insurance, which are government-funded. These include companies such as "Medicaid," which offers free or low cost health insurance coverage based on the patients' income. This is not to be confused with the company "Medicare," which entitles patients who are disabled or over the age of 65 to medical care.

Like the U.K, the patient is typically seen by the primary care physician, and then referred to an ophthalmologist. Eye health services in both the U.S. and the U.K. are primarily delivered by ophthalmologists, optometrists, opticians and ophthalmic technicians.

I underwent my rotation at Tulane Hospital, where there are a mixture of daily clinics and surgery. The differences in the healthcare systems are apparent. At Tulane, the patient is required to complete insurance paperwork when attending a clinic or undergoing surgery. Speaking to patients, it was clear that the cost of medical care did deter some of them from seeking early consultations, and from following medical treatment advice. For example, some patients had eye conditions needing life-long eye medication. Eye medication could cost a few hundred dollars, which was a substantial factor for some patients in determining their compliance.

The Lord and Taylor clinic, known as a "charity clinic," also ran two or three times a week in a separate location. This is a resident-lead clinic for the population of New Orleans who cannot afford insurance.

Describe the presentation, diagnosis and management of a prevalent ophthalmic condition.

I spent my elective under the supervision of Professor Ayyala; a leading glaucoma specialist. I attended glaucoma clinics and observed surgeries.

Glaucoma is the second leading cause of blindness in the world. The prevalence of glaucoma in the U.S. is estimated at 2.7 million patients over the age of 40, and approximately 43,000 patients in the state of Louisiana alone are affected.

Glaucoma is a collective term for a group of eye disorders that share common features. These include optic disc cupping, visual field defects and usually a raised intraocular pressure (normal limits 10-21 mmHg), with associated damage to the optic nerve. It occurs when drainage of aqueous humour into the trabecular meshwork is impaired due to changes in the meshwork's structure. Inadequate drainage increases the intraocular pressure, causing damage to surrounding nerve structures and eventual visual impairment. Risk factors for glaucoma include a strong family history, hypertension, a thin cornea, hypermetropia and a raised intraocular pressure. It typically occurs in patients over the age of 40 and is on the rise in the U.S. due to its' expanding elderly population. Additionally, Louisiana has a large African-American population, who have a slightly higher predisposition for developing glaucoma.

There are different types of glaucoma, including open angle and closed angle, and it may be classified as primary or secondary, or congenital or acquired. The most common form of glaucoma presenting to clinic was primary open angle glaucoma, which is a progressive disease and often known as a "silent sight killer." This is because symptoms do not usually occur until the condition is at an advanced stage, where unfortunately the damage cannot be reversed. Prevention of glaucoma in these patients by regular eye screening examinations is therefore key, although no national screening programme exists as yet. Classic symptoms include a low grade headache and blurry vision, which typically affects peripheral vision initially before threatening central vision. Diagnosis is via a dilated slit lamp examination. Tonometry is used to measure the intraocular pressure, whilst gonioscopy is performed to examine the anterior chamber angle. Optic disc examination confirms an enlarged cup:disc ratio of >0.6, as the optic nerve fibres in the rim of the optic disc have been destroyed. Classically, an arcuate scotoma visual field defect is present. First line management of these patients routinely involves ocular hypotensive medications to reduce or normalise the intraocular pressure. Prostaglandin analogues are the mainstay of treatment, although beta-blockers may be used as an alternative or an adjunct. Unfortunately, many patients with advanced glaucoma require surgery to attain a reduction in pressures. I witnessed multiple glaucoma surgeries, including trabeculectomies, canaloplasties, Ahmed valve placements, and a recent micro-invasive surgery involving an "Istent."

The Istent trabecular micro-bypass surgery is intended to reduce intraocular pressures by enhancing aqueous outflow via the usual physiological pathway, i.e. directly from the anterior chamber to the Schlemm canal and therefore bypassing the trabecular meshwork. It claims to offer many advantages, including shortened recovery times, improved post-operative visual acuity, and significant reduction of intraocular pressure in those with mild

to moderate open angle glaucoma. This procedure is intricate and requires a high level of manual dexterity.

The presentation of open angle glaucoma sharply contrasts to that of angle closure glaucoma, which constitutes a medical emergency. Clinical features include vomiting, ocular pain, loss of vision, visualisation of "haloes", a fixed mid-dilated pupil and a red eye. Urgent diagnosis and reduction of intraocular pressure is required, which is usually facilitated by a peripheral iridotomy.

To gain a deeper insight into the specialty and to gage its suitability as a career. To develop my ophthalmic knowledge and practical skills.

I was fortunate to be able to spend time rotating through different ophthalmology sub-specialties, and observe the key surgeries which occur on a day to day basis. One of my main goals of the placement was to gain experience in examining patients with the slit-lamp, which I feel is a skill learned only with continual practice. I feel I have developed this skill and am keen to enhance this further. The vast depth of the ophthalmology field was apparent during my placement, with sub-specialties in the cornea and the retina. Due to the time constraints, it was impossible to feel comfortable with recognising and diagnosing patients with such a variety of ophthalmic conditions. I however felt that I gained knowledge of the more prevalent presentations. I also had the opportunity to present a patient with ocular ischaemic syndrome at the departments' grand rounds, which I found useful for my learning. Overall, I enjoyed the placement and would recommend it to anyone considering a career in ophthalmology.

My next learning objective would be to undergo skill training in a practical lab, where I may practice suturing and other surgical skills. I feel this is important to assess my manual dexterity as evidently required in ophthalmic surgery. I am keen to undergo further ophthalmology rotations to develop this.