

SSC 5c – Advanced Clinical Clerkship in Ophthalmology – Harbor UCLA hospital: 25th April – 20th May 2011

I chose to do an elective in Ophthalmology after completing a research project in my third year on intraocular lymphoma. The course at Harbor UCLA appealed to me as it allowed me the opportunity to improve on my ophthalmic history taking skills and become proficient in examining the eye particularly in using the slit lamp microscope and indirect ophthalmoscope. During these 4 weeks, I was able to shadow residents in patient consultations and learn more about common eye diseases such as diabetic retinopathy, glaucoma and cataract. This was also enhanced by my time in the operating theatre, where I observed procedures used to treat eye diseases such as intraocular lens insertions, vitrectomies and strabismus corrections.

As mentioned earlier, one of the commonest presentations to the eye clinic is diabetic retinopathy (DR). This is one of the leading causes of legal blindness in the USA.^I It is estimated that 5 years after diagnosis around 23% of patients with type 1 diabetes will have diabetes, with around 80% after 15 years. Type 2 diabetics have a similar but slightly lower prevalence. Most patients I examined had significant retinopathy at the time of their diagnosis, as they were type 2 diabetics and were not diagnosed until years after the onset of their disease. As a result most patients displayed non-proliferative changes (cotton wool spots, dot and blot haemorrhages, venous beading) and proliferative changes (neo-vascularisation of the disc and elsewhere). It was interesting to note the population of people with DR was of a Mexican origin. Nearly 1 in 5 Latinos has diabetes, and among those with diabetes, the prevalence of DR ranges from 30% to 50% and macular oedema from 10% to 15%.^{II} Treatment in the form of panretinal photocoagulation was used to decrease areas of leaking blood vessels and kill off the formation of new ones. This is based on the concept that decreasing the metabolic oxygen requirement of the retina decreases the release of endothelial factors that promote angiogenesis. This would lead to a regression in neovascular tissue. Approximately 10-15 patients were lasered during the day.

Glaucoma was another common presentation to the eye clinic. The disease is the elevation of intraocular pressure above normal limits (10-21 mm hg) with visual field defects and optic neuropathy. The visual defect (arcuate scotoma) tends to occur late in the disease as glaucoma is usually insidious. Peripheral vision is lost first before central vision loss develops. This is the second leading cause of blindness in the world and is set to increase in both the United States and Europe as the elderly population grows.^{III IV} The majority of patients seen in the clinic had open angle form,

^I Klein R, Klein B. Vision disorders in diabetes. In: National Diabetes Data Group, ed. Diabetes in America. 2nd ed. Bethesda, MD: National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases; 1995:293–337.

^{II} Aung T. Eye disease in Latinos: insights from a study in Los Angeles Latino Eye Study. Am J Ophthalmol. 2010 May;149(5):697-8.

^{III} Oostenbrink JB, Rutten-van Molken MP, Sluyter-Opdenoordt TS. Resource use and costs of patients with glaucoma or ocular hypertension: a one-year study based on retrospective chart review in the Netherlands. J Glaucoma. 2001;10:184–191.

^{IV} Kobelt G. Health economics, economic evaluation, and glaucoma. J Glaucoma. 2002;11:531–539.

with a slight preponderance of African-Americans. Symptoms would usually include blurred vision over the course of a year with low grade headache. On examination with the slit lamp microscope, an increased cup to disc ratio was seen. The mainstream treatment for this disease is eye drops: the most commonly used being the prostaglandin analogues (such as Latanoprost) which have a good efficacy.^v Other medication can also be used such as Epinephrine, Acetazolamide and Timolol (the latter being contraindicated in asthmatics). If medical treatment does not suffice, a trabeculoplasty can be performed. In this procedure, argon laser burns are applied to the trabecular meshwork to facilitate aqueous outflow. The lesser common form of glaucoma is angle closure, which is an ophthalmic emergency. This is characterised by sudden ocular pain, seeing halos around lights, red eye, very high intraocular pressure (>30 mmHg), nausea and vomiting, and a fixed, mid-dilated pupil. Treatment is usually by peripheral iridotomy: a YAG laser is used to form a direct communication between the anterior and posterior chambers through the iris. One interesting case I witnessed, concerned a case of secondary glaucoma in a male with a history of anterior uveitis (inflammation of the iris and ciliary body). This syndrome leads to iris adhesion to the lens (synechiae) and thus blocks of the flow of aqueous humour between the anterior and posterior chambers.

The most frequent reason for presentation to the clinic was undoubtedly cataracts – opacity of the lens in one or both eyes. The World Health Organisation estimates that cataract is the leading cause of blindness in the world. Cross sectional studies place the prevalence at 50% in those aged 65-74; with an increase to 70% for those over 75.^{vi} The most common cause of cataract is age related but other causes include systemic diseases such as diabetes, congenital, trauma and drug induced (steroids being the most common case). There are three types of cataract, depending on the zones of the lens affected: nuclear, subcapsular or cortical. In the clinic, a great number of cataract cases seen were of the nuclear sclerosis type. Patients would complain visual disturbance, followed a diminution and finally a failure of vision. These patients also tend to develop lenticular myopia due to the increase in refractive power of the nucleus of the lens. Diabetic patients tended to present with the subcapsular form and in contrast, their near vision was affected. Treatment was centred on whether the condition limited activities of daily living. The surgical procedure performed was by extracapsular extraction with intraocular lens implantation, using a device called a phacoemulsifier. This device transmitted high energy waves to break up a lens and be removed in pieces. An artificial lens is then inserted via a high gauge needle and positioned. In all cases of surgery, patients are followed up post operatively and checked with slit lamp examination, paying particular attention to intraocular pressures.

My time in Harbor-UCLA allowed me to participate in teaching conferences at Jules Stein Eye Institute, as well as interact with other members of the multi-disciplinary team in the eye clinic such as the optometrist and orthoptist and learn more about their roles. In summary, I feel I have gained more confidence in examination of the eyes and being able to formulate a differential diagnosis and plan for common eye problems.

^v Kiuchi Y, Takamatsu M, Mishima HK. PhXA41, a prostaglandin F₂ analogue, reduces the intraocular pressure in human volunteers during day and night [ARVO Abstract]. Invest Ophthalmol Vis Sci. 1994;35(4):S2178.

^{vi} Al-Ghoul KJ et al. Distribution and type of morphologic damage in human nuclear age-related cataracts. Exp Eye Res. 1996 Mar;62(3):237-51.