Case Report: An outlook on outreach vision screening.

Moe Htet Myint MD[1].

[1]Mandalay Eye Hospital, Department of Ophthalmology University of Medicine Mandalay.

***Background**: Alport syndrome, a hereditary nephritis accompanied by high tone sensorineural deafness and distinctive ocular signs, was first reported in the early 1900s by Dr. Cecil A. Alport in 1927. Studies have demonstrated that it is caused by a genetic defect within one of the alpha chains of the type IV collagen, the major component of basement membranes (BM) in the kidney, inner ear, and eye. Pathologic biopsy studies and genotyping play an important role in evaluating patients with Alport syndrome. Difficulties still exist to confirm the diagnosis of Alport syndrome (AS) exactly (Xu et al. 2010).*

***Case Report**: A middle aged male presented with bilateral reduced vision. His vision was not improved with refraction and anterior lenticonus and retinal flecks were significant during dilated fundus examination. We noticed facial puffiness and pallor. Then we obtained hypertension and reduced hearing from history. There was no known family history. We decided to do the investigations to confirm the diagnosis of Alport syndrome and to know the severity.*

***Conclusion**: This is an unexpected case seen in the outreach vision screening. With the help of slit-lamp findings, Alport syndrome was diagnosed and associated nephropathy and sensorineural deafness were referred for the appropriate treatment. It is fascinating that eye screening can save a life for lifelong treatment.*

***Keywords:** Anterior lenticonus, Alport Syndrome, Hereditary Nephritis, X-linked Alport syndrome (XLAS), autosomal recessive Alport syndrome (ARAS), autosomal dominant form (ADAS)*

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Introduction

According to the annual report of Prevention of Blindness Myanmar, cataract is the number one cause of blindness in our country and refractive error is the commonest cause of the visual impairment. Every year, there are more than 10 outreach screening performed. With the support from Government and local well-wisher, slit-lamp microscope is an essential equipment to find out the anterior and the posterior segment pathology like this case. All the team members are happy to catch the problem which needs to proceed surgery. However, when ophthalmologist can find out the clues which threaten the life of patient, we all are pleased and this is the one incentive to update the carrier.

Case Report

A 35 year-old man presented in an outreach eye screening with reduced vision in both eyes over couple of years. He is a healthy working farmer with only history of hypertension for more than 5 years. Also he said hard of hearing for the same duration. He has two elder sisters and one younger sister who are all healthy. His mother died of probably ascites 20years ago and did not know the cause of death. His father is still alive and healthy. On examination, he had a vision of 20/200 OU with best correction. There was no abnormality in pupils and EOM testing. IOP Intraocular pressure was 15mmHg with NCT noncontact tonometry. Slit-lamp examination showed marked bilateral anterior lenticonus. Both disc and macula are pretty good except flecks found all over the retina. On general examination his blood pressure was 170/100 mmHg with marked pallor. Blood haemogram revealed haemoglobin 5.1 g/dl which was consistent with marked anaemia. His creatinine was 12.7 mg/dl which is 10 times more than normal. There was albuminuria and haematuria in microscopic examination of urine. In addition sensorineural hearing loss was found in audiometry test. In ultrasound (abdomen), both kidneys are small in size 5.9 into 2.7 cm, right kidney and 7 into 3.1 cm, left kidey with bilateral chronic nephropathies.

We referred the patient to the nephrologists for this life threatening condition and they planned to do dialysis.

Discussion

Alport syndrome is a rare genetic disorder characterized by progressive kidney disease and abnormalities of the ears and eyes. There are three genetic types. X-linked Alport syndrome (XLAS), autosomal recessive Alport syndrome (ARAS), autosomal dominant form (ADAS).

The hallmark of the disease is the appearance of blood in the urine (haematuria) early in life, with progressive decline in kidney function (kidney insufficiency) that ultimately results in kidney failure, especially in affected males. XLAS is caused by mutations in the COL4A5 gene. ARAS is caused by mutations in both copies of either the COL4A3 or the COL4A4 gene. ADAS caused by mutations in one copy of the COL4A3 or COL4A4. . Individuals with heterozygous COL4A3 or COL4A4 mutations usually have thin basement membrane nephropathy with normal

renal function but some develop renal impairment (Savige et al. 2016). The next stage in progression is gradual loss of kidney function, frequently associated with high blood pressure (hypertension), until, the kidneys fail to work (Kashtan, 2017).

Progressive hearing loss (sensorineural deafness) occurs frequently in people with Alport syndrome. The deafness results from impaired transmission of sound input from the inner ears (cochleae) to the brain via the auditory nerves. Diminished hearing is usually evident by late childhood in males with XLAS although it may be mild or subtle. In males with XLAS the frequency of hearing loss is approximately 50% by age 15, 75% by age 20 and 90% by age 40 (Kashtan, 2017). Individuals diagnosed with Alport syndrome should undergo hearing tests that determine a person's audible range for tones and speech (audiometry).

Individuals with Alport syndrome may also develop abnormalities in several parts of the eyes including the lens, retina and cornea. Eye abnormalities in XLAS and ARAS are very similar in presentation. Eye abnormalities are uncommon in ADAS. Anterior lenticonus is a condition in which the lenses of the eyes are shaped abnormally, specifically the lens bulges forward into the space (anterior chamber) behind the cornea. Anterior lenticonus can result in the need for glasses and sometimes leads to cataract formation. Anterior lenticonus occurs in about 20% of males with XLAS and often becomes apparent by late adolescence or early adulthood (Kashtan, 2017).

The retina, may also be affected, usually by pigmentary changes caused by the development of yellow or white flecks superficially located on the retina (Kashtan, 2017).

The cornea, may also be affected, although the specific abnormalities can vary. Recurrent corneal erosions and posterior polymorphous corneal dystrophy may occur (Kashtan, 2017).

Tissue studies (kidney or skin biopsy) are very useful tools in the evaluation of patients with Hematuria. With immunostaining, an antibody that reacts against collagen type IV alpha-5 chain proteins is added to the skin sample. Normally, alpha-5 chains are found in skin samples, but in males with XLAS they are nearly completely absent. Alpha-3 and alpha-4 chains are not present in the skin and, therefore, skin biopsies cannot be used to diagnose ARAS or ADAS (Kashtan, 2017).

A kidney biopsy may be also performed. Abnormalities of the glomerular basement membrane (GBM) that can be detected by an electron microscope. In addition to detecting alpha-5 chains, kidney samples can be assessed to determine whether type IV collagen alpha-3 or alpha-4 chains are present and in what quantity (Kashtan, 2017).

The treatment of Alport syndrome is directed toward the specific symptoms. The current standard of care for patients with Alport syndrome is angiotensin blockade in those with overt proteinuria (Kashtan, 2017).

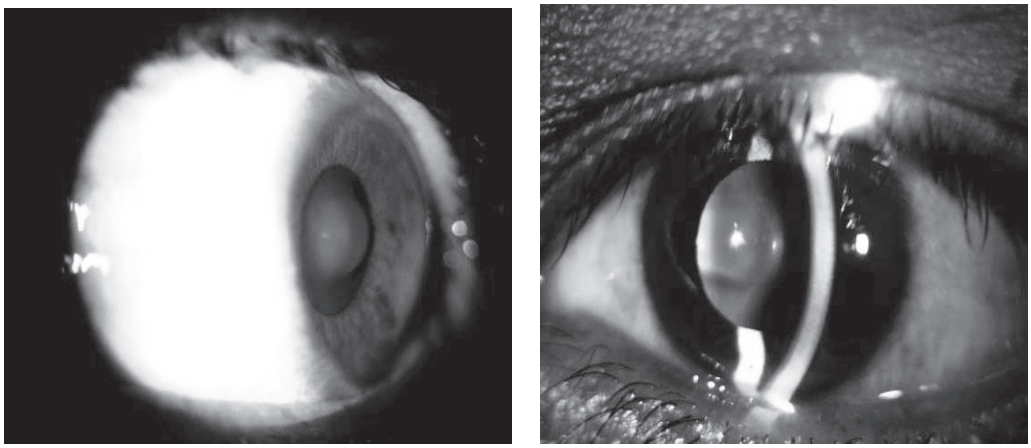
Dialysis is to control blood pressure, and helping to maintain proper levels of essential chemicals such as

potassium. End-stage renal disease is not reversible so individuals will require lifelong dialysis and kidney transplant (Kashtan, 2017).

Because of unavailable genetic testing and limited immunoassay for skin biopsy, we diagnose this rare genetic disorder, Alport syndrome by only clinical in general and ophthalmologist points.

Conclusion

This is the proof that the eye is the window of not only for the Soul/Brain actually of the whole body.



A B

Fig. 1 35 yr-old male with reduced vision in both eyes on slit lamp examination, anterior lenticonus: bilateral axial projection of the anterior surface of the lens into the anterior chamber (A) Right eye (B) Left eye

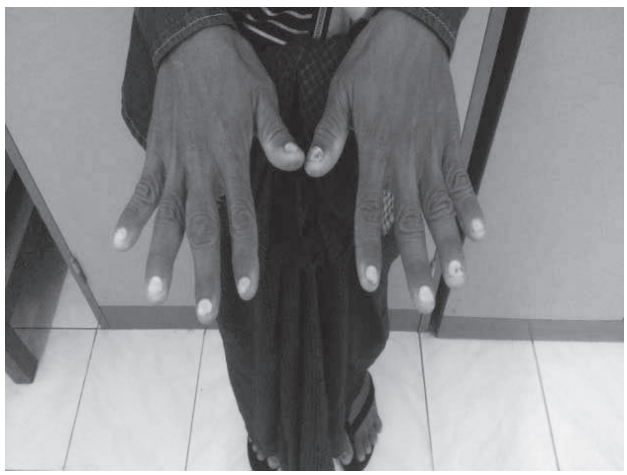


Fig. 2 pallor of the nail beds showing marked anaemia due to chronic renal insufficiency.

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