

## A Case of IgA Nephropathy

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### Introduction

IgA Nephropathy (also known as Berger disease) was first described by Berger and Hinglais in 1968, is the commonest form of Glomerulonephritis and which is characterised by haematuria and episodic proteinuria. There is male preponderance with a peak incidence in 2<sup>nd</sup> and 3<sup>rd</sup> decade of life and rare incidence of familial clustering. Though the disease is slowly progressive in nature and often people remain asymptomatic with microscopic haematuria, progression to macroscopic haematuria and subsequently risk of clot colic of aero medical significance. A case of young female commercial pilot aspirant who was detected to have microscopic haematuria and proteinuria is discussed below from aeromedical point of view.

### Case Report

19 year old female, an applicant for initial commercial pilot license medical evaluation was detected to have microscopic haematuria with proteinuria during routine urine examination. On further investigation the diagnosis was confirmed to be IgA nephropathy through kidney biopsy (histopathological examination). She was apparently asymptomatic and her all haematological and biochemical parameters were within normal limits. Renal function tests were normal (serum Urea- 11mg/dl, serum Creatinine- 0.53mg/dl), her USG abdomen and KUB was normal. In view of clinically asymptomatic individual with normal renal function tests, she was assessed fit for flying duties and started on Angiotensin Receptor blocker (Tab Losartan 25

mg BD), and advised for regular follow up with renal function test (Blood urea, serum creatinine), 24 hour urinary protein and urine protein to creatinine ratio. On follow up she was found to have mild normocytic hypo chromic anemia (Hb- 11gm %) for which she was made unfit for flying for 06 weeks but subsequently her haemoglobin was 12.3gm% after 06 weeks and she was assessed fit for flying with regular follow up by a Nephrologist.

### Discussion

IgA nephropathy is characterized by predominant IgA deposition in the glomerular mesangium. It is one of the commonest cause of non urological haematuria in young adults. The classical symptom is episodic haematuria following an episode of non specific upper respiratory tract infection. Some cases present with associated proteinuria (less than 2 gram/day). These patients are usually asymptomatic and often detected incidentally during routine medical or screening medical examination as found in this case during initial medical evaluation for commercial pilot license. However, IgA nephropathy is highly variable, both clinically and pathologically. Clinical features range from asymptomatic hematuria to Rapidly Progressive Glomerulonephritis (RPGN)[1]. RPGN is characterized clinically by a rapid decrease in the glomerular Filtration Rate (GFR) of at least 50% over a short period, ranging from a few days to 3 months[1].

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IgA nephropathy is known to be more common in Caucasians and Asians and is rare in Africans, with high male to female ratio (2:1 to 6:1) and usually detected in young (between 16-35) people. The prevalence of disease varies from 10 to 40% of all renal biopsies performed in various countries, this variation is thought to be due variation in the incidence of urine analysis and subsequent follow up there after [1].

Renal function may remain within normal limits initially and for a substantive period thereafter. The gold standard for the diagnosis is renal biopsy which shows proliferation of the mesangium, with IgA deposits on immunofluorescence and electron microscopy. Long-term follow-up studies of the biopsy proven cases have illustrated that some patients are at risk for slow progression to ESRD (end-stage renal disease), which develops in approximately 15% to 20% of patients by 10 years and 20% to 50% patients by 20 years. [1,2,3,4]. The cases of occasional haematuria or proteinuria, otherwise asymptomatic are known to have a good prognosis [1,6,7].

Sustained hypertension, impaired renal function, persistent haematuria, and proteinuria above 1 gm/day are the poor prognostic markers of IgA nephropathy. Histologically, interstitial fibrosis, tubular atrophy, and glomerular scarring predict a worse outcome. As with other glomerular diseases, the risk of progression is more closely correlated with tubulointerstitial findings than with glomerular changes [3] A study by Xie J et al have also indicated that patients with higher systolic blood pressure, lower GFR, hemoglobin, and serum albumin levels at baseline are at a greatest risk of progression to ESRD [7]. Fibroblast growth factor-23 (FGF23) [8] and familial IgA nephropathy have also been reported to be associated with worse prognosis [9],

therefore a thorough family history should also be ascertained while considering initial medical for flying certification.

### **Aeromedical Concerns**

A positive urine dip stick test warrants for microscopic examination, which may reveal microscopic haematuria and proteinuria, both of which can be benign conditions, but can also herald underlying urinary tract or kidney disease. So all suspected cases should be evaluated thoroughly to rule out any kind of renal pathology. Before proceeding for further investigation it would be prudent to repeat the urine test ensuring correct method of sample collection. The sample should be a mid stream sample, the patient should not have undergone any undue physical (orthostasis, heat) and aviation (acceleration, hypoxia) stress in the preceding 24 hours, as these are known to precipitate haematuria and proteinuria [10]. Establishment of definitive proteinuria by 24 hours urinary protein estimation (more than 2gm/day) and urine protein-to-creatinine ratio (UPr/Cr) is advised prior to invasive tests like renal biopsy. An UPr/Cr ratio of less than 0.2 mg is equivalent to 200 mg/d of protein excreted and is considered normal [10].

The diagnosis of IgA Nephropathy is considered unsuitable for entry to military flying training [11, 12, 13], but it may be permissible for training as a commercial pilot, provided that renal function is not significantly impaired. Candidates accepted for training with underlying glomerular disease must be warned of the potential danger of subsequent loss of licence should the disease progress. However the diagnosis of nephropathy in a trained pilot should be viewed differently depending on the merit of each case [11]. A asymptomatic individual with normal renal

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function and disease in remission without medication or well controlled with ACE (Angiotensin-Converting Enzyme) inhibitors or ARBs (Angiotensin Receptor Blockers) may be considered for wavier to continue the flying duties [13].

### **Conclusion**

IgA nephropathy is often detected incidentally during work up for asymptomatic microscopic haematuria and/ or proteinuria. Though this condition may remain benign for long duration but fitness for flying duties warrants periodic follow up and differential approach depending up on the employability (military/ civil). The experience and operational status of the aircrew should be considered during aeromedical decision making.

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