Anti Glomerular basement membrane disease at younger age

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Abstract:
Good pasture disease, an autoimmune disease presenting with sole pulmonary manifestations is rare. And the youngest age reported to have this disease was 9 years. Here we report a child presented with isolated pulmonary manifestations at 11 years of age.

Keyword: Goodpasture disease, Anti GBM, pulmonary hemorrhage

Introduction: 1919 Ernest Good pasture described a case with lung and renal involvement and hence it was named after him. Goodpasture’s name has been used in a more specific clinical condition known as Goodpasture disease, which is the pulmonary renal syndrome specifically associated with anti-glomerular basement membrane (anti-GBM) antibodies. To avoid confusion the term Anti GBM disease is preferred.

Case report:
A 11 year old boy developmentally normal child first born to non-consanguinous parents coming from vandalar presented with history of bringing out mouthful of blood, at times mixed with saliva for past 45 days, initially frequency was 1-2 episodes/day and now increased to 8-10 times/day. Not associated with blood clots, abdominal or chest pain, vomiting, cough, breathlessness, fever. There was no history suggestive of bleeding diathesis, renal or cardiac disease, exposure to hydrocarbons, family history of renal disease. He had no contact with tuberculosis. On examination pallor was noted. Ear, nose and throat examination was normal. Otherwise normal vitals, general and systemic examination. We started to evaluate the cause for pulmonary hemorrhage. His Hb-9.2g%, retic count 1%, smear-moderate hypochromic microcytic RBCs, total leukocyte count-7200 with normal differential count, platelets-3.9 lakhs, stool for occult blood-negative, blood group O positive. Blood sugar, urea, serum creatinine, serum electrolytes, urine routine for albumin, sugar and deposits, coagulation profile, liver function tests, chest X ray, ECHO,
ultrasound abdomen, HRCT chest were normal. Urine spot protein creatinine ratio was 0.1. Pulmonary function test assessed by spirometry was within normal limits. We did fibre optic bronchoscope, it showed normal airway anatomy and analysis of bronchoalveolar lavage fluid showed gram stain, acid fast bacilli stain, fungal stain were negative and aerobic, anaerobic, fungal culture were sterile and Pearl stain showed hemosiderin laden alveolar macrophages (>90%) which confirms the presence of pulmonary hemorrhage. He was seronegative for HIV, Hepatitis B and C. Assays for ANA and ANCA were negative. Normal complement C3 levels. Anti glomerular basement membrane (GBM) antibody was positive in 1:20 titre. At this juncture we diagnosed as Anti GBM disease. To know the renal involvement and to prognosticate we proceeded with renal biopsy. And it was normal. This child had only pulmonary involvement and so he has favourable prognosis. Treated with Pulse methyl prednisolone followed by oral prednisolone and he responded dramatically, bleeding stopped from day 3 of his treatment.

Discussion:
Goodpasture’s syndrome is a rare disease and with pulmonary involvement alone is very rare. The annual incidence of disease is unknown, but it has been proposed that it represents 1% to 2% of all cases of glomerulonephritis. Goodpasture’s syndrome as a cause of pulmonary-renal syndrome in childhood is extremely rare with only 21 pediatric cases re-reported until now in the medical literature. Studies have reported a male predominance ranging from 2:1 to 9:1. There is a bimodal distribution with respect to age, with peaks at 20 to 30 and 60 to 70 years of age, and the youngest patient being 9 years old and the oldest being 79.

Etiopathogenesis:
The Goodpasture antigen has been localized to the alpha chain of type IV collagen. One theory is injury to the kidney or lung by hydrocarbon exposure. Another proposed triggering event is an upper respiratory tract illness or a flu-like illness. Also a link to the histocompatibility complex HLA-DR2 has been described by Rees et al, who found two cases with this complex.

Clinical manifestations:
Patients with anti-GBM disease may present with a spectrum of conditions ranging from pulmonary hemorrhage with minimal or no renal involvement to full-blown renal failure with limited or no pulmonary involvement. Hemoptysis is the most common presenting symptom. In more than 50% of patients, it precedes glomerulonephritis. Other common pulmonary symptoms are cough, dyspnea on exertion, fatigue, weakness and renal manifestations are hematuria, oliguria, edema.

Laboratory abnormalities:
The most common laboratory finding is anemia, as a result of blood loss from pulmonary hemorrhage with secondary iron deficiency. Other common laboratory findings are increased blood urea nitrogen (BUN) and creatinine from renal dysfunction. Urinalysis in patients with Goodpasture’s syndrome indicates proteinuria, microscopic or gross hematuria, and red blood cell casts. Chest radiographs may reveal diffuse alveolar filling, diffuse opacities, fluffy hilar and basilar infiltrates, however, radiographs are nonspecific. The use and value of computed tomography and magnetic resonance imaging with Goodpasture’s syndrome remain unknown. In our case he had anemia only and all other investigations turned to be normal.
Diagnosis:
The diagnosis of Goodpasture's syndrome is made by the finding of antiglomerular basement membrane (anti-GBM) antibodies, either circulating in the blood or bound to tissue. Previously, an indirect immunofluorescence technique was used, but this has been replaced by the more sensitive radioimmunoassay and enzyme-linked immunosorbent assay.\[1\] If the diagnosis is uncertain, biopsy needed. The kidney is the most common biopsy site. The sample is examined for tissue bound anti-GBM antibodies. Lung biopsy is not as accurate as kidney biopsy for making a definitive diagnosis and has many difficulties. Under light microscopy, renal biopsy samples usually show crescentic glomerulonephritis. Immunofluorescence reveals linear staining with IgG in the glomerulus.

Treatment:
Goodpasture's disease is to be treated aggressively and targets to remove circulating autoantibodies, which is accomplished by plasmapheresis, to stop the production of the anti-GBM antibodies using corticosteroids, immunosuppressive medications and to remove the triggering agent.\[14\],\[15\] Renal transplantation can be performed in patients requiring chronic hemodialysis after disappearance of the circulating anti-GBM antibodies. Advanced renal failure at presentation and/or presence of crescents affecting more than 50% of glomeruli is a serious prognostic sign.

Conclusion:
Prompt diagnosis and early initiation of treatment is imperative, as early treatment has favourable outcome. Though Good pasture's disease is rare in children, any older child presenting with pulmonary hemorrhage think a possibility of good pasture's as simpler demonstration of anti GBM antibodies makes the diagnosis.

References:


