Rapidly Progressive Glomerulonephritis
An Uncommon Complication in Varicella Zoster Infection


Abstract
Chicken pox is usually a self limiting disease with rare life threatening complications. Renal involvement is uncommon during the course of the disease. A 14 year old male, presented with acute haemorrhagic varicella. Two weeks after the onset of chickenpox, he was admitted with oedema feet, puffiness of face and decreased urine output. The investigations revealed raised blood urea nitrogen and serum creatinine levels. Urine showed 2+ albuminuria, granular casts and red blood cells. He was treated with acyclovir, ampiclox and given one session of dialysis for rising levels of serum creatinine and acute renal failure. Despite the treatment, he succumbed to the disease. Complete autopsy was performed, which revealed bilateral swollen, enlarged kidneys. Histopathology showed crescentic glomerulonephritis.

This case is presented to highlight uncommon serious renal complication, hence awareness of such complication with early aggressive management can help in saving patient’s life.

Introduction
Chicken pox, like other viral infections has occasionally been noted to precede the development of acute renal disease. Chicken pox is usually a self limiting disease with life threatening complications. In this case, evidence of renal disease appeared soon after the typical cutaneous manifestation of varicella infection developed. The possible role of varicella in the aetiology of patient’s renal lesion is suggested by the clinical and serologic evidence which excluded the likelihood of streptococcal infection.

We present a case of Chicken pox presenting with rapidly progressive glomerulonephritis, uncommon fatal renal complication.

Case Report
14 year old male presented with acute haemorrhagic varicella. Two weeks later, he was admitted with oedema of face and oliguria. Patient had high blood pressure. Investigations revealed low haemoglobin levels raised blood urea nitrogen and serum creatinine levels. Urine showed 2+ albuminuria, granular casts and haematuria.

ESR levels were within normal limits. ASO titres were unremarkable. He was treated with amikacin, acyclovir and ampiclox. One session of dialysis was given for rapidly rising serum creatinine levels and oliguria.

Patient expired after two days.

Complete autopsy was performed. External examination showed presence of multiple healed circular scars, few covered with black crust on the trunk.

There was oedema on both the feet and puffiness of face.

Internal Examination
Grossly, the kidneys are bilaterally enlarged and swollen with pinpoint petechial haemorrhages (Fig. 1).
Other organs were unremarkable. Microscopy of kidney showed features of diffuse proliferative glomerulonephritis with extra capillary crescent formation in greater than 50% of glomeruli (Fig. 2). The tubules and interstitium showed features of acute tubular necrosis. Final cause of death was attributed to acute renal failure due to crescentic glomerulonephritis and acute tubular necrosis (post infectious) in a case of chicken pox.

Discussion

Chicken pox caused by human herpes virus type 3 – varicella zoster virus. It is highly contagious, usually childhood disease (peak incidence 5-9 years). It is more commonly associated with severe complications in adults. The most common complications are seen in central nervous system like aseptic meningitis, Guillain-Barre syndrome, transverse myelitis.

There are many other complications of varicella infection. Respiratory complications include bacterial pneumonia, varicella pneumonia which is the most serious complication following the chicken pox. Infrequently, varicella may be complicated by keratitis, arthritis, hepatitis, orchitis, myocarditis and glomerulonephritis. The association of nephritis with varicella dates back to at least 1884 when Henoch described 4 cases of nephritis in children with chicken pox. Varicella related nephritis is very rare. In a large series of 2534 patients only 3 (0.12%) developed clinical nephritis.

Acute proliferative glomerulonephritis is an immune complex hypocomplementaemic glomerulonephritis in response to viral infection – clinically the patient presents in a nephritic or nephritic syndrome. Histopathological features ranged from congested, haemorrhagic glomeruli, endothelial hyperplasia, varying degrees of tubular necrosis to presence of crescentic formation in the glomeruli. Crescentic glomerulonephritis presenting as rapidly progressive renal failure is very rare life threatening complication of chicken pox and is about 0.1% of all cases as mentioned in the literature.

The aetiologic relationship of the complications to varicella of course remains presumptive, but the typical attack of varicella was typical of the disease. There was no evidence of preceding streptococcal infection.
which were shown by the serological studies and complement levels which were normal, contrary to what is seen in post streptococcal nephritis. In patients with renal complications secondary to varicella, therapy with corticosteroids results in reactivation. There are reports which point to severe and potentially fatal course of varicella in patients during treatment with steroids.\(^8,9\)

This patient received dialysis because of acute renal failure. However our patient also received course of steroids in view of proteinuria. The patient expired after 2 days.

Immunocompromised individuals with either primary varicella infection or recurrent infection (zoster) benefit from early therapy with intravenous acyclovir.\(^10\) During acute phase, peritoneal dialysis might be indicated.

The present report adds to the already existing evidence that varicella can be the cause of glomerulonephritis preceding the skin lesions — and treatment with corticosteroids or immunosuppressive therapy may flare up the varicella infection, hence needs to be used cautiously.

In conclusion, it must be recognized that rare serious renal complications can occur in young adults who have varicella infection. A high index of suspicion is needed to diagnose complications associated with varicella infection early for prompt and cautious management of patient.

References