Figure 1. Microscopic examinations of kidney biopsy specimen



(a) & (b) Hematoxylin and eosin stain of kidney biopsy specimen revealed interstitial infiltrate with tubular injury (Arrows), and glomerulitis with cellular crescent (Arrowhead) and mesangial proliferation (Arrow)

(c) Immunofluorescence stain for IgA deposits

(d) Electron microscopic picture of subepithelial deposit (Arrow)

Figure 2. Serum creatinine change over 6 months



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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Author | No. of patients | Age | Gender | Medication | Cancer | Kidney biopsy | Treatment | Outcome |
| Fadel et al.8  2009 | 1 | 64 | M | Ipilimumab | Melanoma | Extramembranous and mesangial deposits of immunoglobulin (consistent with lupus nephritis) | Steroid | Resolved |
| Forde et al.9  2012 | 1 | 59 | M | Ipilimumab | Melanoma | Not available | Steroid  No dialysis | Resolved |
| Voskens et al.10  2013 | 1 | 53 | F | Ipilimumab | Mucosal | Not available | Steroid | Resolved |
| 2 | 72 | F | Ipilimumab | Unknown primary | Not available | Steroid | Resolved |
| Izzedine et al.11  2014 | 1 | 72 | M | Ipilimumab | Melanoma | Interstitial inflammation and polynuclear infiltration in glomerulus | Steroid | Resolved |
| 2 | 60 | F | Ipilimumab | Melanoma | Tubulo-interstitial inflammation with necrosis and two non-necrotizing granulomas | Steroid | Resolved |
| Thajudeen et al.12  2015 | 1 | 74 | M | Ipilimumab | Melanoma | Interstitial edema with infiltrate of lymphocytes and granulomas | Steroid | Resolved  Ipilimumab resumed |
| Vandiver et al.13  2016 | 1 | 58 | F | Nivolumab | Melanoma | Not available | Steroid | Resolved |
| Hofmann et al.14  2016 | 1 | 52 | M | Nivolumab | Melanoma | Not available | Steroid and normal saline | Resolved  Nivolumab resumed |
| 2 | 73 | M | Pembrolizumab | Melanoma | Not available | Steroid | Improved |

Table 1. Reports of immunotherapy associated renal adverse events and treatment