Case report

Prophylactic IVIG and corticosteroids for severe skin reactions post radio-contrast

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Learning Points for Clinicians

| Delayed skin reactions to radio contrast media (RCM) arise 1 h to 1 week after RCM administration. We describe the first report of successful prophylactic use of low-dose intravenous immunoglobulin (IVIG) in preventing severe late onset skin reaction to RCM despite conventional prophylaxis. |

An 81-year-old Caucasian male presented with acute coronary syndrome, requiring high-dose radio contrast media (RCM) life-saving catheterization. He had a history of diffuse maculo-papular rash 24 hr after an RCM procedure. The patient had a total of four RCM procedures at outside facility with the use of ionic, hyper osmolar, iodinated RCM and non-ionic, non-iodinated low-osmolar contrast. Despite pretreatment with a conventional prophylactic regimen of antihistamine and corticosteroid medications and use of non-iodinated low-osmolar RCM, he developed a delayed skin rash within 24-48 hr. He reported a worsening of the rash with each RCM procedure, describing isolated skin sloughing without mucosal involvement after his RCM procedure. The patient’s expert cardiology team felt his current symptoms mandated a high-dose RCM life-saving procedure without equally efficacious alternatives to determine extent of his coronary disease. Allergy was consulted for recommendations to prevent a recurrence of the rash after a RCM procedure that needed to be acutely performed. Given that there are absolutely no validated testing methods to RCM to date for predicting future risk of reaction, the patient did not undergo skin testing to RCM. Although a previous similar report has successfully use cyclosporine in addition to standard prednisone prophylaxis to prevent delayed type hypersensitivity (DTH), high-dose RCM in addition of cyclosporine increases the risk for contrast induce nephropathy. In addition, cyclosporine would take a week to effectively suppress the immune system and prevent a delayed reaction.

We followed a previous published protocol of using prophylactic IVIG to prevent recurrence of Stevens-Johnson syndrome due to RCM. A total of four doses of IVIG (200 mg/kg/day) were given 24 hr prior and 8, 32 and 56 h after the catheterization. Oral prednisone 60 mg was given 24 hr and 1 h prior and 24 hr after the procedure, then tapered to 50 mg for 3 days, 40 mg for 3 days, 20 mg for 3 days and 10 mg for 3 days. The patient tolerated high-dose RCM for a coronary catheterization without recurrence of a delayed rash up to 7 days post procedure. He did not develop any adverse skin reactions to the RCM during a total of 3 months of follow-up.

Hypersensitivity reactions to iodinated RCM are immediate-type (<1 h) or non-immediate type (>1 h), the latter affect from 0.5 to 9% of patients exposed to RCM. Delayed skin reactions usually occur within 3 h to 7 days after exposure to iodinated RCM, are T-cell mediated and are similar
to late onset skin reactions to other drugs. The most frequent manifestation is a maculo-papular rash. Other skin reactions include: erythema, urticaria, angioedema, fixed drug eruption, macular exanthema, erythema exudativum multiforme, scaling skin eruption and pruritus. IVIG has been described as being able to suppress inflammation, inhibit phagocytosis, alternate glucocorticoid receptor binding affinity, down regulate dendritic cell maturation and function as well as T cell function, the later by impaired antigen presentation.

We suspect that both IVIG and prednisone had cumulative anti-inflammatory effect, inhibited T-cell activation and downstream cytokine signalling pathways preventing DTH response. We suspect that the immunomodulatory effect of combination prednisone and low-dose IVIG was adequate to prevent DTH.

Our report suggests that a prophylactic regimen of IVIG combined with prednisone prevented recurrence of a delayed cutaneous reaction to RCM in this patient. Further studies are required to determine in depth role of immunomodulatory effects of IVIG in preventing DTH response despite prophylactic regimen. We also found a beneficial immunomodulatory effect with IVIG at low dose rather than at high dose as suggested by usage in vasculitis or autoimmune diseases.

Conflict of interest: None declared.

References
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