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Letter to the editor

Acute Renal Allograft Rejection after Ingestion of Royal Jelly

Nikolina Basic-Jukic, Ivana Juric, Vesna Furic-Cunko, Marko Banic, Lea Katalinic and Ines Mesar

Department of nephrology, arterial hypertension, dialysis and transplantation; *Department of urology; University hospital centre Zagreb and School of medicine University of Zagreb, Zagreb, Croatia

Dear Editor,

Royal jelly (RJ) is a secretion produced by the hypopharyngeal and mandible glands of worker honey bees. It has numerous compounds with diverse biological activity, including proteins, fatty acids, free amino acids, sugars, minerals and vitamins [1]. Beneficial effect has been observed on numerous conditions while RG was found to have antitumor, anti-inflammatory and antioxidant properties, decreases blood pressure and serum cholesterol. Additionally, an immunomodulatory effects have been demonstrated [2,3]. Herein, we describe a case of renal transplant recipient who developed acute humoral rejection after ingestion of RJ.

A 36-year-old female with lupus nephritis, who received a renal allograft from a deceased donor in February 2007 after two years of peritoneal dialysis, was admitted to hospital for evaluation of sudden increase in serum creatinine from the baseline 140 µmol/l to 370 µmol/l. She had an episode of acute cellular rejection in 2011 (Banff 1A) without signs of humoral rejection. She did not tolerate mycophenolate because of the diarrhea, so her immunosuppressive protocol included tacrolimus, azathioprine and steroids. Basiliximab was used for induction. On admission she was afebrile, with normal blood pressure, in good overall condition. Graft was not sensitive to palpation but was enlarged and tender. Patient reported that she used royal jelly for a month "for improvement of the immunological status", and it should be emphasized that she worked as a pharmacist. Biopsy revealed acute cellular rejection Ib with C4d positive in 75% of peritubular capillaries and positive donor specific antibodies, DQ2 (MFI 19800). Immunological results revealed that lupus was not active. She received steroid pulses (2 g of metilprednisolone in 5 doses) and 7 plasma exchanges. Her serum creatinine fell to 230 µmol/l and remained stable after 6 months of follow up.

Renal transplantation requires finely tuned balance between over- and under-immunosuppression to achieve optimal result. Use of different immunosuppressive drugs is a major tool in these efforts. However, availability of different over-the-counter drugs and remedies provides a permanent challenge. Our patient, a pharmacist by profession, used RJ for one month when she experienced significant increase in serum creatinine and developed biopsy proven acute humoral rejection. Royal jelly is efficient for numerous pathological conditions. Its bioactive properties include antibacterial, antiviral, wound-healing, antioxidant, anti-inflammatory, nephroprotective, and also immunomodulatory activities. In animal models of systemic lupus erythematosus, RJ induced decrease in the serum level of IL-10 and in different autoantibodies as well as a reduction in the number of splenic autoreactive B cells [4]. Royal jelly had inhibitory effects on the release of the nitric oxide and interleukin-10, and production of the TNF-α [5]. After RJ therapy the percentages of $CD4^+$ regulatory T cells and $CD8^+$ regulatory T cells were significantly increased, while apoptotic CD4 T lymphocytes were significantly decreased when compared with the baseline values [6]. In the rat model, it was also found to modulate the immune responses by affecting their dendritic cells through modification of the fatty acid content [7]. A hydroxyl-2-decenoic acid which was found in RJ has recently been found to promote the growth of T lymphocyte subsets and IL-2 production [1]. In clinical studies, RJ was found to have an immunomodulatory role in autoimmune thyreoiditis [8] and in systemic lupus erythematosus [9].

In conclusion, the knowledge about the immunological effects of RJ is scarce. However, it is clear that profound changes in immunological system may be associated with its use. To the best of our knowledge, this is the first reported case of acute renal allograft rejection after the use of RJ. Thus, royal jelly should be avoided in renal transplant recipients. Our case clearly emphasizes a need for permanent patient education and need for maintenance of compliance even in the most educated patients.

Conflict of interest statement. None declared.

Correspondence to: Nikolina Basic-Jukic, Department of nephrology, arterial hypertension, dialysis and transplantation, University hospital centre Zagreb, Kispaticeva 12, Zagreb, Croatia

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