Nephrotic syndrome in a bee keeper: rediscovery of an extinct disease?

TF Hiemstra, KGC Smith, DV Hamilton

ABSTRACT An elderly beekeeper presented with nephrotic syndrome due to secondary amyloidosis. He developed progressive renal impairment and ultimately required dialysis. The patient had received multiple bee stings per day over seven decades without any allergic reactions. Here, we report secondary amyloidosis associated with recurrent bee venom exposure.

KEYWORDS Bee sting, kidney, nephrotic, secondary amyloidosis, venom

DECLARATION OF INTERESTS No conflict of interests declared.

CASE REPORT

A 78-year-old man presented with nephrotic syndrome in 2006. Blood investigations were non-contributory and a diagnostic renal biopsy was performed, revealing secondary amyloidosis (SA) (Figure 1). Other aspects of the patient’s history and examination were unremarkable, and notable for the absence of known aetiologies for SA. The patient developed progressive renal impairment and remained nephrotic, and became oliguric and ultimately required haemodialysis. He later revealed his favoured pastime of beekeeping. He started practising this art at the age of 13, during the wartime Britain’s ‘Dig for Victory’ initiative. For a teenager during the Second World War protective wear was difficult to obtain, leading to 20–30 stings daily over the summer months. He kept bees for the succeeding 67 years, continuing to sustain multiple stings daily, and only more recently began to wear protective clothing which did not include gloves (Figure 2).

We hypothesised that chronic exposure to bee venom through multiple stings induced SA. A radioallergosorbent test revealed elevated anti-bee venom IgG consistent with continued bee venom exposure, and an elevated anti-bee venom IgE of 188 Ku/L (normal range <107) consistent with hypersensitivity to bee venom.

DISCUSSION

Acute renal failure due to multiple bee stings is well documented. It is commonly due to acute tubular necrosis, pigment nephropathy secondary to haemolysis or rhabdomyolysis, or possibly interstitial nephritis. Bee venom exposure may be associated with albuminuria, and acute onset of nephrotic syndrome after bee sting is well described. However, despite an extensive literature search, we could find no previous reference to bee venom-associated amyloidosis. Our patient pointed out a reference in an early beekeeper’s manual describing as matter of fact a ‘toxic effect on the kidneys’ not infrequently occurring late in the career of apiarists chronically exposed to venom of the European honey bee (Apis mellifera).
Secondary amyloidosis is a disorder characterised by the tissue deposition of fibrils composed of fragments of serum amyloid A protein (SAA), an acute phase reactant. Serum amyloid A is inducible by pro-inflammatory cytokines such as IL-1 and TNFα, which are induced by bee venom. Secondary amyloidosis may complicate a variety of chronic inflammatory disorders, most commonly rheumatoid arthritis, inflammatory bowel disease, ankylosing spondylitis, familial fever syndromes and malignancy. Such chronic inflammatory conditions were not present in our patient. However, the primary components of bee venom (mellitin and phospholipase A2) may produce an inflammatory response, which may be local or systemic, is sometimes delayed and can produce a serum sickness-like illness.

Apiculture has been practised in Britain for millennia, with the earliest archaeological evidence in Western Europe dating from around 3000 BC. Beekeepers were with the earliest archaeological evidence in Western Apiculture has been practised in Britain for millennia, with the earliest archaeological evidence in Western Europe dating from around 3000 BC. Beekeepers were with the earliest archaeological evidence in Western Apiculture has been practised in Britain for millennia, with the earliest archaeological evidence in Western Europe dating from around 3000 BC. Beekeepers were...