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DIMINISHED ANTIMICROBIAL DEFENCE IN DIABETES MELLITUS

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It is widely accepted that people with diabetes (DM) bear an increased propensity to develop infections and the magnitude of the diabetes effect on the risk, remains an active research question. Besides cardiovascular causes and cancer, infectious diseases substantially contribute to the reduced life expectancy for DM. Diabetes enhances the susceptibility to significantly higher rate of osteomyelitis, pyelonephritis, cystitis, pneumonia, cellulitis, sepsis or peritonitis and therefore to lower respiratory and urinary tract, bacterial skin and mucous membrane infections. There are several additional aspects that link diabetes to rare infections such as emphysematous pyelonephritis, invasive otitis externa, emphysematous cholecystitis or rhinocerebral mucormycosis. Host- and organism-specific factors may explain why DM are more susceptible while are immunocompromised and recurrent infections can pose a problem. Although diabetes seems to predispose to some infectious diseases and possibly to a worse outcome thereof, several lines of evidence suggest that diabetes comorbidities importantly contribute to this phenotype. Many factors could predispose to infections, including genetic susceptibility, altered cellular and humoral immune defence, plus poor blood supply and nerve damage. Alterations in metabolism contribute significantly and improvements in metabolic control is limiting the development of an infection. The reasons why DM presents with an increased susceptibility to frequent and protracted infections remain still far from being understood. Studies have shed light to the diminished defective chemotaxis, bacterial killing, superoxide production, leukotriene release, lysosomal-enzyme secretion and endoplasmic reticulum stress, which is related to the degree of glycaemic control and is reversible. Further on hyperglycaemia leads to more pronounced activation of coagulation, while at the same time neutrophil degranulation is reduced. Infections continue to bear a serious hazard for the DM but remains difficult to comprehend the underlying problem and explain why epidemiologic studies yielding conflicting results.

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