

REVIEW ARTICLE

Innate Immunity Alterations in Type 2 Diabetes Mellitus: Understanding Infection Susceptibility

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Abstract: Diabetes is a chronic disease characterized by marked alterations in the metabolism of glucose and by high concentrations of glucose in the blood due to a decreased insulin production or resistance to the action of this hormone in peripheral tissues. The International Diabetes Federation estimates a global incidence of diabetes of about 10% in the adult population (20 - 79 years old), some 430 million cases reported worldwide in 2018. It is well documented that people with diabetes have a higher susceptibility to infectious diseases and therefore show higher morbidity and mortality compared to the non-diabetic population. Given that the innate immune response plays a fundamental role in protecting against invading pathogens through a myriad of humoral and cellular mechanisms, the present work makes a comprehensive review of the innate immune alterations in patients with type 2 diabetes mellitus (T2D) as well as a brief description of the molecular events leading or associated to such conditions. We show that in these patients a compromised innate immune response increases susceptibility to infections.

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1. INTRODUCTION

Diabetes Mellitus is a group of chronic metabolic diseases characterized by hyperglycemia and abnormalities in the use and metabolism of glucose, proteins and lipids [1]. A sustained and elevated glucose levels and increased resistance to insulin action in peripheral tissues characterize it. Recent estimates by the world health organization (WHO) and international diabetes federation (IDF) suggest that nearly 430 million people live with the disease, and it has been estimated that with an increase of 48 % in 30

elderly and young individuals [3]. This growing trend in the incidence of diabetes demands an increased awareness and an urgent assessment of disease-associated co-morbidities in order to reduce or mitigate deaths related to this illness. Several complications have been observed in diabetic individuals, such as hyperglycemic emergencies that can lead to death [4]. Other complications that have been frequently observed in these individuals are diabetic retinopathy [5], diabetic foot ulcers [6] and infection [7]. About infections, several reports exist on the matter. Seshasai et al. reported that there is an increased burden of