

Letter to Editor-macrophages and Brucella Infection

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INTRODUCTION

Brucellosis is a zoonotic disease, it remained as a common health problem for human and animals around the world. Between different name and type of diseases we can point to Mediterranean fever and Bang's disease. Brucella bacterium is affective factor in re-emerge of this disease. This gram negative bacterium is part of α -proteobacterial [1]. Among variety species of this bacterium these four species: *B. melitensis*, *B. canis*, *B. abortus*, *B. suis* has major role in making infection in human, of course *B. suis* has high pathogenic feature. However in many reports mentioned that *B. melitensis* has the most measure of infective in human. The most prevalent transition ways of this infection are proximate connection with infected animals; it means amniotic liquid and aborted fetus, or consumption of food products like unpasteurized dairy or contaminated meat [2]. About half million new infected cases in human and millions new cases in animals are reporting yearly. Through these involved countries with this disease, name of Iran, Syria and many countries in middle East region are appear on top of this category [3]. Brucellosis has different symptoms such as fever, night sweat, lost weight. This disease divided to three forms, acute, sub-acute, chronic. For example in acute form, more ever, these symptoms, another signs like headache, orchitis, arthritis and hepatosplenomegaly are recognizable [4]. Vast spectrum of created problems in infected person make diagnosis of this disease very difficult, there upon paying heed to creation of recognizable diagnostic ways of this disease with similar infection is necessary and make this necessity hundred fold. However disparate diagnostic tests offered since the end of nineteen century. Host's body immune at

arrival moment of bacteria supply with some cells like macrophage and dendritic cells (DCs) which are part of immunity. In next stage adaptive immunity which is mainly Cell-mediated immunity (CMI) does its function of course humoral immunity in this infection has less importance rather than others. Between them, macrophage is considered as phagocyte cell and Antigen-presenting cell (APC). These cells have precursors namely monocytes at creation moment of infection or every damaging of tissue reach themselves to special tissues and there in divers kinds of tissues macrophage. While brucella infection some mechanisms like oxidative burst cause elimination of microorganism [5]. This microorganism survives in host in different ways amongst lipopolysaccharides (LPS) bacterium accompany with hidrophobicity feature of organism make a weak inflammation response of host as a conclusion easy entrance in to Macrophages and be hidden in those [5]. Inside of macrophage bacterium fixes in Brucella-containing vacuoles (BCVs), it means prevention of acidity of BCV, caused survive for long time, in hard environment condition such as food deprivation for extra time survive [6]. Bacterium expresses VirB operon as necessary factors for T4SS coding, of course it should be mentioned that T4SS has critical role for BCV developing and producing [7]. Shown, a main partner for Brucella T4SS subunit VirB2 is eukaryotic protein CD98 heavy chain. This transmembrane glycoprotein is involved in cell-to-cell fusion and amino-acid transport. CD98 heavy chain transiently accumulates around the bacteria during the early phases of infection and is required for both intracellular multiplication and optimal bacterial uptake of Brucella bacterium, in the other hand, T4SS is essential virulence factor in brucella infection [8,9]. Numerous studies show

that infection caused by smooth brucella that targeted mitochondrial pathway inhibits macrophages apoptosis [10]. More ever, the zinc-finger protein A20 has critical obligations as inhibitor of macrophage activation and apoptosis in tumor necrosis factor receptor1 (TNFR1) signaling pathway. While, this agent promotes *Brucella* bacterium intracellular growth via prohibition of apoptosis and activation of macrophages [11]. Therefore according to mentioned spots recognition of these escape pathways from immune system of host with more familiarity with body immune mechanism against infections, can along with other research in divers fields of infection offer better treatment protocols for prevention or control of this infection.

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