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Opinion Article

Brucellosis Accompanies Humanity into the 21st Century, One Element Contribute to its Persistence Particularly

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Opinion

Brucellosis is a zoonotic, infectious disease. It affects many mammalian species; the human is no exception. In 1968 the World Health Organization [1] classified the zoonosis as: "… responsible for more diseases, miseries and economic losses than any other known animal disease that affects humans". Despite such a shocking alert, 42 years later it was noted: "... exemplifies the lack of interaction between the public health and veterinary sectors, making this infection one of the most frequent zoonosis in the world [2]." In the current millennium it persists and does so as a reemerging disease [3]. It affects a wide spectrum of animal species, bases of food production, whose profitability is markedly reduced [4]. Its success may be associated with a set of factors that mask its real influence, one in particular: the omission of the biofilm variable when studying the impact of the disease and the measures for its control. It is the reason for this opinion piece. Almost all that has been investigated on Brucella melitensis, the prototype species of the genus, also the most virulent to humans, corresponds to its planktonic phenotype. This phase under natural conditions only represents 0.1% of these bacteria, while 99.9% does it as biofilm bacteria [5]. Given the very high percentage difference, it could be assumed that everything investigated was lost time. It's not like that. According to its clinical manifestations, the disease can present in three forms: acute, sub-acute and chronic [6]. Planktonic forms are the undisputed responsible for the acute phase, while chronicity is due to the transit of Brucella spp. to biofilms. The biofilm phenotype, in addition to the above, justifies the failures of conventional antibiotic therapy [7,8]. Added to the resistance conferred by these three-dimensional structures is the fact that 80% of all chronic bacterial infections are associated with this phenotype. Hence the need to assess alternatives according to a moment that is already identified as a post-antibiotic era [8]. Although very diverse, they all pursue common objectives: to inhibit the formation of biofilms, or to disperse them and thereby promote the return to planktonic forms that are more susceptible to treatment [9]. The use of: liposomes, quorum sensing inhibitors, antimicrobial peptides, nanoparticles and probiotics stand out in this regard [10]. Including the biofilm variable, as a key virulence factor in brucellosis studies, will contribute to a better understanding of this zoonosis as well as the establishment of more effective contemporary strategies for its control.

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