More than Skin Deep: Deciphering the Role of Bartonella henselae Infection in Melanoma Metastasis, (Phase Two)

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When cancer spreads from one organ to another, it becomes significantly harder to treat. This process, known as metastasis, is involved in 90% of cancer deaths. Because metastasis presents a serious barrier to effective treatment and recovery, it is crucial to understand how bacterial infection plays a role in cancer metastasis. The purpose of this study was to understand how the gram-negative bacterium Bartonella henselae, which is found in 3% of US blood donors, influences melanoma metastasis. Through the development and design of melanoma–B. henselae co-cultures, the expression of proteins important to cancer metastasis were studied. It was shown that infection of B henselae significantly increases the expression of the protein Interleukin-8 (IL-8) by over two-fold. IL-8 is directly correlated to the metastatic potential of cancer, as it increases ability of malignant cells to migrate through the vasculature system and invade other organs. Clinically, over-production of IL-8 leads to diminished patient outcomes. This is the first evidence that B henselae induces over-expression of IL-8 in melanoma cells and influences the metastatic-potential of any human cancer. This work could potentially influence the way cancer treatment plans are structured. For at-risk patients, programs can be initiated to screen for B. henselae. For cancer patients infected with B. henselae, simple changes could be made to treatment plans, such as the addition of an antibiotic. Understanding how factors from our environment influence cancer metastasis will ultimately lead to more effective treatment plans and better patient outcomes.

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