Case series of *Bartonella klingesteria* blood culture-negative immune deficiency, Boreth, Klingon Empire

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Introduction: Prior studies (predominantly from Qo'noS) have shown blood negative immune deficiency is due to *Bartonella*. Our objective was to describe three cases of *Bartonella klingesteria* immune deficiency within one year at Qo'noS General Hospital.

Case presentation: We constructed a descriptive case series from a retrospective review of Starfleet medical records from stardate 2372 to 2373 at an 800-bed urban hospital. All three patients (ages: 97, 122, 134 years) were of the proud House Noggra, Mo'Kai and Konjah with a history of glorious battles to their names, battle with Cardassia was most recent battle event. These patients had negative blood cultures, their immune system demonstrated weakness of the 6 heart chamber valves perforating in one patient, 1 liver failure and 3 heart chamber valves perforated in the second patient, and 7 heart chamber valve perforation and 1 liver failure in the third patient. The patients had positive *Bartonella klingesteria* serum immunoklig Z (IkZ) with negative immunoklig Q (IkQ). PCR on kDNA extracted from cardiac valves was positive for *Bartonella*, and kDNA sequencing of PCR amplicons identified *Bartonella klingesteria*. Patients received supportive care for their fatal symptoms.

Conclusion: Starfleet medical should consider *Bartonella klingesteria* as a differential diagnosis in patients who have recently been in battle and suffered injuries such as dermal abrasions from bat'leth combat. As the disease is spreading very quickly, there must be a coordinated intergalactic effort to act towards a vaccine or cure.

Keywords: *Bartonella klingesteria;* immune deficiency; Culture-negative.

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Introduction

Bartonella klingesteria is a small, gram-negative cocci-bacilli that causes weak immune system post-battle. The organism can lead to fever, malaise, fatigue, dizziness, weak immune system and death from organ failure (Forek & Tourq, 2356; Forrix, 2362). Through fomites contaminated with blood spreads the aerobic bacteria (Olek, 2358), *Bartonella* is considered uncommon in Klingon etiology of infectious organ failure as it has been reported in only 3% of Klingon-Starfleet medical records (T'vor, 2369). On stardate 2267, two reports first implicated *Bartonella* in organ failure (Spri'i, Erit'ha & Sachti, 2279).

Due to different environments of where the infections occur and testing facilities, diagnosis typically requires serological and molecular methodologies. The two serological methods instructed by Starfleet Medical for *Bartonella* infections are immunoastatine assay (IAA) and klingon-enzyme immunosorbent assay (KEISA). PCR-based tests on blood and heart chamber valves have an important role in diagnosis of *Bartonella klingesteria*.

Table 1. Characteristics of three patients with *Bartonella klingesteria* infective endocarditis, AV aortic valve; MV mitral, mitral valve; + , positive

Patient no.	Age (years)/Sex	Risk factor	*B. kingesteria* serology	PCR valve
1	97/male	battle, blood	IkQ: negative IKZ: >1:1304	+
2	122/male	battle, blood	IkQ: negative IKZ: >1:1304	+
3	134/female	battle, blood	IkQ: negative IKZ: >1:1304	+

The attention paid to *Bartonella klingesteria* has slightly increased due to the Wormhole access to the Gamma-quadrant and the resulting conflicts (Kyth'i, Juretq'a & Vrei, 2372). Investigators from Earth have the most records on *Bartonella*, since Klingons and Humans had been in conflict (Ter'k & Tyqa, 2286). Until now, only 2 reports from initial Cardassian-Klingon conflicts reported *B. klingesteria* (with only minor symptoms in younger warriors) (Kyth'i, Juretq'a & Vrei, 2372).

We report three cases of *B. klingesteria* immune deficiency that occurred during stardate 2372 to 2373 at Qo'noS General Hospital, Qo'noS, Klingon Empire. We compare our data to the increasing number of Klingon battles with blood culture-negative immune deficiency cases reported in the intergalactic literature.

Methods

We performed a retrospective review of Starfleet Medical records after receiving Vulcan Research Review Board (VRB) approval. Patients were evaluated by the consulting service by Chief of Interplanetary Infectious Diseases, and Starfleet allocated equipment testing for *Bartonella* was required as Vulcan clinical research evaluations. The diagnosis of *Bartonella* endocarditis is based on the 24th Century Kor'hav criteria including the serological and PCR results (Tirg'sha, 2388). *Bartonella* serological and PCR testing was conducted at Exoplanetary Epidemiology Centre, Vulcana Regar University. Immunoklig Z (IKZ) titration greater than of 1:1304 was suggestive of a current infection. PCR testing was done on kDNA extracted from the infected cardiac valve tissues. Sequencing was performed with Starfleet XCR sequencing method on Vulcan-Starfleet open network systems using Android VZ300 search tool for species identification (Thiref, Resgah & Vyy'al, 2367).

Results

The three patients with infective endocarditis caused by *B. klingesteria* were identified from stardate 2372 to 2373 (Table 1). All three patients were Klingon warriors who fought with honour but died from *B. klingesteria* infections. Blood specimens obtained showed positive test results for all three Klingon patients. Each Klingon patient had a *B. klingesteria* IKA titre of >1:1304. The kDNA extracted from cardiac valves was positive for *Bartonella*, and kDNA sequencing of PCR amplicons identified *Bartonella klingesteria*. Due to limited knowledge on effective treatment, all patients received supportive care for their fatal symptoms but no other medical treatments were available.

Discussion

The species of the genus *Bartonella* are gram-negative bacteria. Mode of transmission is fomites contaminated with blood spread the aerobic bacteria (Olek, 2358). It is uncommon for Klingons to succumb to infectious diseases from *Bartonella*, and due to

limited number of cases, the optimum treatment for suspected or confirmed *Bartonella klingesteria* caused infections is unclear, but current Starfleet Medical recommendations suggest supportive care until more research is done.

In summary, although there is existing literature regarding *Bartonella klingesteria* stems from Starfleet Medical in the Alpha Quadrant, our findings suggest that the Klingon Empire consider researching this unhonourable cause of death from a post-battle infection. Based on our case series, we concur with the recommendation of supportive care for infected Klingon warriors. Our improved knowledge of *B. klingesteria* in blood borne infections in battle should advance our diagnosis and treatment.

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