**Suppl Table 1: Characteristics of patients who had AIHA in the setting of babesiosis**

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| Reference | Age | Sex | US state | Blood transfusions within 90 days before diagnosis | Comorbid conditions | Lowest Hb (mg/ dL) or Hematocrit (%) | Coombs test | Duration from babesia diagnosis to detection of WAHA | Parasitemia (%) | Blood transfusion | Antibiotic treatment | Treatment specific for AIHA | Requirement of therapeutic apheresis | Follow up |
| Woolley et al., 20171 | 43 | F | MA, USA | NA\* | Hodgkin lymphoma, had splenectomy 15 years ago, breast cancer 1 year prior | 25% | Positive for both IgG and C3 | 4 weeks | 11 | no | Azithromycin, atovaquone, clindamycin | Prednisone 4 weeks | no | On follow up after 22 months, no relapse of babesiosis or AIHA |
| Woolley et al., 20171 | 66 | M | MA, USA | NA\* | AML, allogenic HSCT | 18% | Positive for both IgG and C3 | 3 weeks | 8.3 | yes | Azithromycin, atovaquone | none | no | On follow up after 20 months, no relapse of babesiosis or AIHA |
| Woolley et al., 20171 | 65 | F | MA, USA | NA\* | Gastric cancer | 21% | Positive for both IgG and C3 | 3 weeks | 11.8 | no | Azithromycin, atovaquone | Prednisone 20 weeks, cyclophosphamide 32 weeks | no | On follow up after 25 months, no relapse of babesiosis or AIHA, 5 months later DAT was negative |
| Woolley et al., 20171 | 35 | M | MA, USA | NA\* | Hereditary spherocytosis | 24% | Positive for both IgG and C3 | 2 weeks | 4.3 | no | Azithromycin, atovaquone | Prednisone 6 weeks | no | On follow up after 18 months, no relapse of babesiosis or AIHA, 2 weeks later DAT was negative |
| Woolley et al., 20171 | 54 | M | MA, USA | NA\* | Previous trauma | 22% | Positive for both IgG and C3 | 3 weeks | 2.5 | no | Clindamycin and quinine, then atovaquone and azithromycin | none | no | On follow up after 3 months, no relapse of babesiosis or AIHA |
| Woolley et al., 20171 | 77 | M | MA, USA | NA\* | Metastatic pancreatic neuroendocrine tumor | 24% | Positive for both IgG and C3 | 4 weeks | 5.4 | yes | Azithromycin, atovaquone | Dexamethasone 1week, prednisone 3 weeks | no | On follow up after 6 months, no relapse of babesiosis or AIHA, 10 days later DAT was negative |
| Santos, Tierney, & Manesh, 20202 | 84 | M | PA, USA | no | Splenectomy after MVA | NA | Did not document coombs positivity, however diagnosis was confirmed as WAHA | Presented 4 months after symptom onset, WAHA diagnosed at presentation | 5% | no | Azithromycin, atovaquone | no | no | After 4 months, hemoglobin normalized, parasite levels undetectable |
| Narurkar, Mamorska-Dyga, Nelson, & Liu, 20173 | 43 | M | NY, USA | no | HLH complicated by splenectomy 9 years ago | NA | positive for IgG | One week post discharge | NA | no | Azithromycin, atovaquone | Prednisolone with a 6-week taper | no | No recurrence of hemolysis for 14 months follow-up period. Also found to have coinfection wit ehrlichiosis |
| Narurkar, Mamorska-Dyga, Nelson, & Liu, 20173 | 81 | F | NY, USA | no | Coronary artery disease, hypertension, chronic bronchitis | 6.5 | positive for IgG | NA | <1% | yes - multiple red blood cell transfusions | Azithromycin, atovaquone | no steroids | yes - once | Anemia did not resolve despite clearance of blood parasitemia, Death |
| Elder et al., 20194 | 65 | F | MD, USA | no | Autoimmune hepatitis, systemic lupus erythematosus, Immune thrombocytopenic purpura requiring splenectomy | 10.9 | positive for IgG | Concurrent | NA | no | Azithromycin, atovaquone | none | no | Review of serial blood smears showed disappearance of babesia |
| Shatzel et al., 20155 | 44 | M | MN, USA | yes (on retrospective evaluation, one unit he received had babesia microti titer of 256) | Fulminant alcoholic pancreatitis | 6.9 | Positive for IgG and C3b | Concurrent | >30% | yes - multiple red blood cell transfusions for severe anemia | Clindamycin and quinine | none | Red blood cell exchange transfusion | Continuing hemolysis and death |
| Karkoska et al., 20186 | 21 | F | NY, USA | yes (26 days after her last transfusion developed symptoms, later confirmed that donor was the source of infection) | Sickle cell anemia (HbSS) on chronic transfusion therapy for stroke prophylaxis | 5.2 | Positive for IgG and C3, (coombs test was negative 10 months prior to the infection although she is on chronic transfusion therapy) | Concurrent | >3.9% | Two units of packed Red Blood Cell transfusions | Initially quinine and clindamycin, then switched to azithromycin, atovaquone | Oral prednisone | no | Two weeks after stopping antibiotics, blood smear was still positive for Babesia, therefore received another 12-week course. Peripheral smear became negative after 27 days of treatment, but the polymerase chain reaction became negative after12 weeks of treatment |
| Karkoska et al., 20186 | 11 | M | NY, USA | yes (later confirmed that donor was the source of infection) | sickle cell anemia (HbS𝛽◦thalassemia) on chronic transfusion therapy for secondary stroke prophylaxis | 6.5 | Positive for both IgG and C3 | Concomitant | 10% | Required multiple daily transfusions | clindamycin and quinine for 5 days, changed to azithromycin and atovaquone for 2 weeks as hemolysis continued, 2 weeks after discontinuation of the antimicrobials, he had a positive blood smear; therefore, antimicrobial therapy was restarted - received the combination of azithromycin, atovaquone, and doxycycline for 11 weeks | methylprednisolone followed by prednisone taper | no | NA |

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| NA | Not available |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| HSCT | Hematopoietic Stem Cell Transplant | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| AML | Acute Myeloid Leukemia | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| \* | Out of these 6 patients only one patient had a blood product transfusion within two months to from babesiosis diagnosis, however, data is not available which patient that was. | | | | | | | | | | | | | | |  |  |
| MA | Massachusetts |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| USA | Unites States of America | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| AIHA | Autoimmune Hemolytic Anemia | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| DAT | Direct Antiglobulin Test | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| HbS | Sickle hemoglobin |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| WAHA | Warm Autoimmune Hemolytic Anemia | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

References

1. Woolley AE, Montgomery MW, Savage WJ, et al. Post-babesiosis warm autoimmune hemolytic anemia. *N Engl J Med*. 2017;376(10):939-946. doi: 10.1056/NEJMoa1612165 [doi].

2. Santos MA, Tierney LM, Manesh R. Babesiosis-associated warm autoimmune hemolytic anemia. *J Gen Intern Med*. 2020;35(3):928-929. doi: 10.1007/s11606-019-05506-5 [doi].

3. Narurkar R, Mamorska-Dyga A, Nelson JC, Liu D. Autoimmune hemolytic anemia associated with babesiosis. *Biomark Res*. 2017;5:14-6. eCollection 2017. doi: 10.1186/s40364-017-0095-6 [doi].

4. Elder SA, O'Brien JJ, Singh ZN, et al. Babesiosis masquerading as evans syndrome. *Am J Med*. 2019;132(7):e616-e617. doi: S0002-9343(19)30237-2 [pii].

5. Shatzel JJ, Donohoe K, Chu NQ, et al. Profound autoimmune hemolysis and evans syndrome in two asplenic patients with babesiosis. *Transfusion*. 2015;55(3):661-665. doi: 10.1111/trf.12901 [doi].

6. Karkoska K, Louie J, Appiah-Kubi AO, et al. Transfusion-transmitted babesiosis leading to severe hemolysis in two patients with sickle cell anemia. *Pediatr Blood Cancer*. 2018;65(1):10.1002/pbc.26734. Epub 2017 Aug 2. doi: 10.1002/pbc.26734 [doi].