Supplementary Material

Table S1. A summary of clinical, hematological, biochemical, blood gas, acid base and endocrine data in the whole group of babesia-infected dogs and the sub-groups collapsed versus non-collapsed and survivors versus non-survivors. The level of significance between the medians of the groups is noted.

Parameter	Normal range	Whole group (n; IQR)	Not collapsed (n; IQR)	Collapsed (n; IQR)	P value	Survived (n; IQR)	Died (n; IQR)	p value
Clinical								
Rectal Temperature (°C)	37.5-39.5	39.6 (320; 39-40.1)	39.7 (248; 39.2-40.1)	38.5 (72; 37-39.7)	<0.001	39.7 (287; 39-40.1)	38.7 (32; 37.5-39.7)	<0.001
Pulse (bpm)	60-160	128 (316; 116-148)	128 (245; 112-148)	132 (71; 120-150)	0.099	128 (286; 116-147)	132 (29; 120-152	0.415
Respiratory rate (bpm)	15-30	44 (287; 32-60)	44 (217; 32-60)	44 (70; 36-60)	0.433	44 (258; 32-60)	40 (28; 32-60)	0.748
Age (months)		20 (319; 9-48)	12 (247; 9-36)	24 (72; 10-48)	0.891	20 (286; 9-48)	22 (32; 9-49)	0.76
Weight (kg)		15.6 (307; 7.8-26.7)	16.2 (238; 8.6-27.50	14.6 (69; 5.7-26)	0.646	15.5 (277; 8-26.2)	20.2 (29; 8-33.2)	0.421
Haematology								
Hematocrit (L/L)	0.37-0.55	0.19 (317; 0.12-0.31)	0.22 (247; 0.145-0.33)	0.11 (70; 0.08-0.16)	<0.001	0.19 (285; 0.13-0.31)	20 (31; 0.105-0.31)	0.425
Reticulocytes (×10^9/L)		82.58 (113; 44.4-170.9)	80 (91; 42.7-80)	89.1 (22; 57.4-226.2)	0.709	82.85 (100; 46.3-170.9)	82.2 (13; 32.4-110.9)	0.55
Total white cell count (×10^9/L)	6-15	6.35 (320; 4.53-11.15)	5.82 (247; 4.3-8.52)	10.5 (69; 5.58-15.7)	<0.001	6.21 (287; 4.43-9.97)	9.27 (32; 5.03-16.17)	.031
Band cell count (×10^9/L)	0-0.5	0.41 (291; 0.17-0.99)	0.32 (225; 0.14-0.69)	1.245 (66; 0.53-2.51)	<0.001	0.365 (260; 0.15-0.875)	1.015 (30; 0.53-2.18)	<0.001
Platelet count (×10^9/L)	200-500	20 (316; 5.9-47)	18 (247; 5.8-40)	23 (69; 4.3-56)	0.331	18 (287; 5.4-45)	22.5 (32; 10.3-54)	0.224
Biochemistry								
Lactate (mmol/L)	<2	2.2 (209; 1.4-4.2)	2 (166; 1.3-3)	9 (43; 3.65-11)	<0.001	2.2 (186; 1.4-3.4)	4.3 (23; 1.7-10.8)	0.006
Glucose (mmol/L)	3.3-5.5	4.7 (317; 3.6-5.6)	4.7 (246; 3.8-5.5)	4 (71; 2.3-5.6)	0.065	4.7 (285; 3.7-5.5)	3.9 (31; 1.8-5.6)	0.079
Bilirubin (μmol/L)	1-6.8	8.8 (230; 4.8-24.3)	7.3 (181; 4.6-11.8)	51 (49; 16.2-103.4)	<0.001	8.2 (206; 4.8-18.9)	29.4 (24; 9.8-93.3)	0.001
ALP (U/L)	20-165	104 (293; 73.5-147)	95 (226; 68-128)	147 (67; 102-221)	<0.001	100.5 (262; 74-143)	125 (30; 73-194)	0.242

ALT U/L)	9-73	32 (294; 23-61)	28 (226; 21-48)	76 (68; 44-172)	0.005	30 (263; 22-54)	63 (30; 24-102)	0.014
Bile acids (μmol/L)	0-8	9.84 (280; 2.64-28.95)	7 (214; 2.2-24.5)	26.7 (66; 7-59.8)	0.044	9.8 (252; 2.6-28.3)	8 (27; 4-54.7)	0.316
Albumin (g/L)	28-41	23.3 (294; 20.3-27.9)	23.9 (226; 21.1-28.3)	20.7 (68; 17.5-23.5)	<0.001	23.4 (263; 20.5-27.9)	22.4 (30; 19.5-25.9)	0.235
Urea (mmol/L)	2.3-8.9	8.05 (188; 5.6-18.28)	6.8 (145; 5.2-11.1)	22 (43; 14.9-28.2)	<0.001	7.5 (167; 5.5-14.4)	25.5 (21; 16.8-31.5)	<0.001
Creatinine (μmol/L)	59-109	66.5 (320; 50-92)	64 (248; 50-89)	71.5 (72; 54-119.5)	0.075	64 (287; 50-87.5)	126 (32; 49-165)	0.001
SIP (mmol/L)	0.7-2.1	1.46 (184; 1.22-1.92)	1.4 (132; 1.2-1.6)	2 (52; 1.5-2.7)	<0.001	1.43 (168; 1.2-1.82)	3.58 (15; 2.05-4.35)	<0.001
Na^+ (mmol/L)	142-151	141 (262; 138.2-143)	141 (100; 138.8-143)	141 (30; 137-143)	0.786	141 (120; 138.9-143)	137.95 (12; 133-143	0.228
K^+ (mmol/L)	3.6-5.1	3.8 (262; 3.5-4.1)	3.87 (100; 3.58-4.09)	3.67 (30; 3.27-4.1)	0.282	3.83 (120; 3.55-4.09)	4.01 (12; 3.32-4.71)	0.436
Cl^- (mmol/L)	107-117	113 (260; 109.9-116.5)	113 (99; 110-116.2)	111.8 (30; 108-119)	0.727	113 (119; 110-116.9)	107.2 (12; 98.1-114.2)	0.009
Ca^{++} (mmol/L)	1.22-1.46*		1.24 (153; 1.17-1.29)	1.17 (48; 1.09-1.22)	<0.001	1.22 (195; 1.16-1.28)	1.1 (17; 1.01-1.22)	0.001
Blood gas and acid base								
pO_2 (mmHg)	81-103	91.4 (98; 81-101.2)	91.6 (71; 82.2-101.3)	91.3 (27; 70.1-100.1)	0.616	91.6 (87; 81.8-101.2)	89.1 (11; 56.6-101.7)	0.54
pCO_2 (mmHg)	31-43	25.4 (252; 21.8-29.5)	26,7 (97; 23.3-30)	19.5 (29; 14.2-25.9)	<0.001	25.4 (115; 21.9-29.30)	26.3 (11; 19.1-31.1)	0.966
pH	7.35-7.46	7.429 (253; 7.378-7.467)	7.433 (97; 7.402-7.471)	7.36 (29; 7.306-7.439)	<0001	7.43 (116; 7.389-7.469)	7.36 (11; 7.332-7.441)	0.049
HCO_3 (mEq)	18-26	16.6 (255; 13.7-19.3)	17.3 (98; 14.9-19.4)	11.9 (29; 7-15.8)	<0.001	16.6 (117; 13.8-19.2)	14.2 (11; 11-18.9)	0.586
Anion Gap (mmol/L)	8-16	14.8 (258; 12.5-17.8)	13.87 (99; 12.3-16.5)	18.8 (30; 14.4-25.9)	<0.001	14.6 (118; 12.5-17.2)	19.4 (11; 16.3-26.5)	0.009
Endocrine								
Total thyroid hormone (nmol/L)	13-45	11.4 (245; 4.04-17.18)	13.87 (180; 8.7-18.1)	2.24 (63; 0.2-5.1)	<0.001	12.3 (219; 5.1-17.4)	2.77 (24; 1.16-5.13)	<0.001
Cortisol (nmol/L)	10-160	159.87 (244; 83.6-382.3)	112 (179; 70.4-204.5)	485.2 (63; 368.5-695.5)	<0.001	141.5 (218; 79.7-303.2)	551.3 (25; 472.5-695.5)	<0.001

Table S2. Summary of the 10 most common macroscopic lesions in babesia-infected dogs that presented for post mortem examination.

Macroscopic lesions	Proportion of necropsied cases in which each lesion was observed (number of dogs evaluated by post mortem (percent)
Splenomegaly due to red pulp hyperplasia	25 (100%)
Hepatosis	25 (100%)
Visceral hemorrhages (excluding GIT, lung and brain)	22 (88%)
Anemia	20 (80%)
Icterus	17 (68%)
Acute interstitial pneumonia ('shock lung')	16 (64%)
GIT hemorrhage	6 (24%)
Pericardial effusion	9 (36%)
Thoracic effusion	4 (16%)
Abdominal effusion	3 (12%)
Pericardial and thoracic effusion Abdominal and thoracic	2 each (16%)
Cerebral babesiosis	4 (16%)
Acute kidney injury (nephrosis)	4 (16%)

Table S3. Clinico-pathological abnormalities identified in this cohort of *Babesia rossi* infected dogs ranked from most to least common.

Abnormality	Proportion (percentage)		Abnormality	Proportion (percentage)
Mixed acid-base disorder (metabolic acidosis with respiratory alkalosis)	86		Increased urea (> 8.9 mmol/L)	43.6
Hemoglobinuria (macroscopic and dip stick)	84.1		Increased bile acids (>15 umol/L)	42
Anemia (hematocrit < 0.37L/L)	83		Increased serum inorganic phosphate (>1.6 mmol/L)	32.6
Hypoalbuminemic (<27 g/L)	72.8		Hypoglycemia (glucose < 3.3mmol/L)	19.2
Identified as having the systemic inflammatory response syndrome	60.5		Arterial hypoxia (pO2 < 60 mmHg)	18
Lactate > 2 mmol/L	55.5		Icterus	16.25
Hypercortisolemic (> 160 nmol/L)	50%		Warm in saline agglutination positive	13
Hypocapnoeic (pCO_2 < 25.19 mmHg)	49.2		Increased creatinine (>133 umol/L)	9.6
Reduced HCO_3 (< 16.29 mEq/L)	47.7		Hemoconcetration (hematocrit > 0.55L/L)	1
Total T4 < 13 pmol/L	44.5			

Table S4 A and B. The number of cases that satisfied the various criteria for the diagnosis of SIRS (A) and the number of cases that were positive for the number of SIRS criteria (B) (SIRS: Systemic inflammatory response syndrome)

A)

White cell criteria		Temperature	Pulse rate	Respiratory rate
WCC>12 or <4 x10^9/L	Band cell count≥10% of WCC	≤37.8 or ≥39.7 °C	≥160 breaths per minute	≥40 breaths per minute
126	92	172	50	184

(B)

One SIRS criteria	Two SIRS criteria	Three SIRS criteria	Four SIRS critria
70	101	51	9