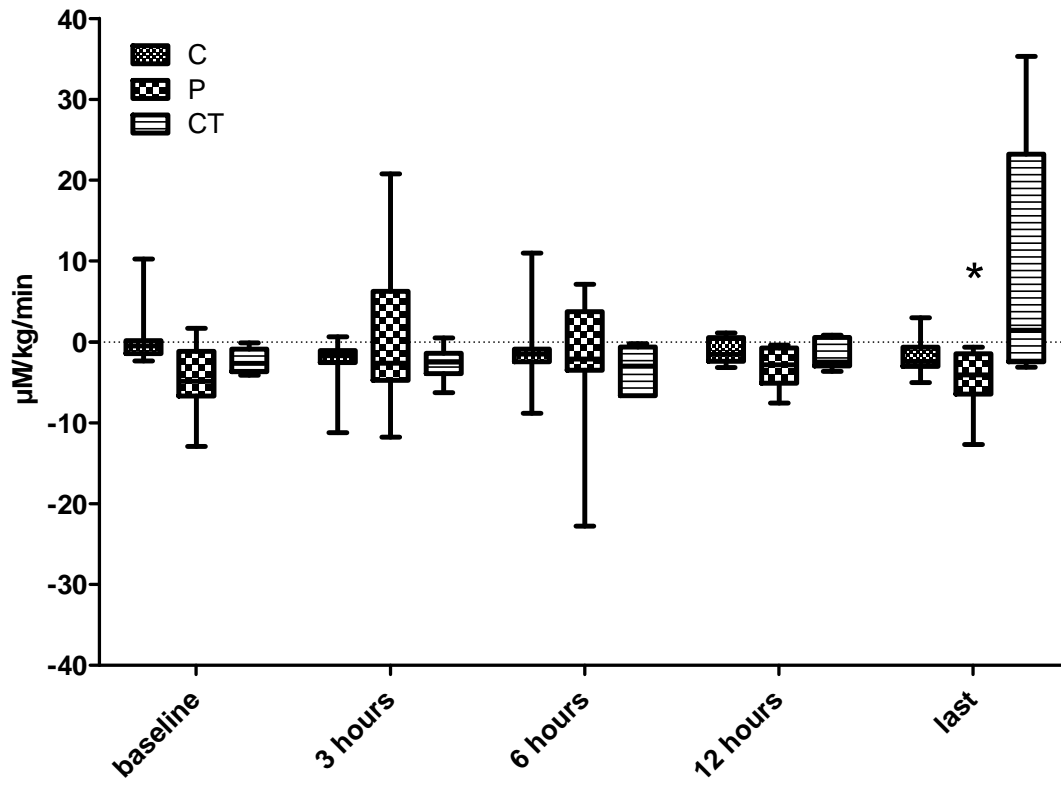


Electronic Supplement

DIFFERENT CONTRIBUTION OF SPLANCHNIC ORGANS TO HYPERLACTATEMIA IN FECAL PERITONITIS AND CARDIAC TAMPONADE

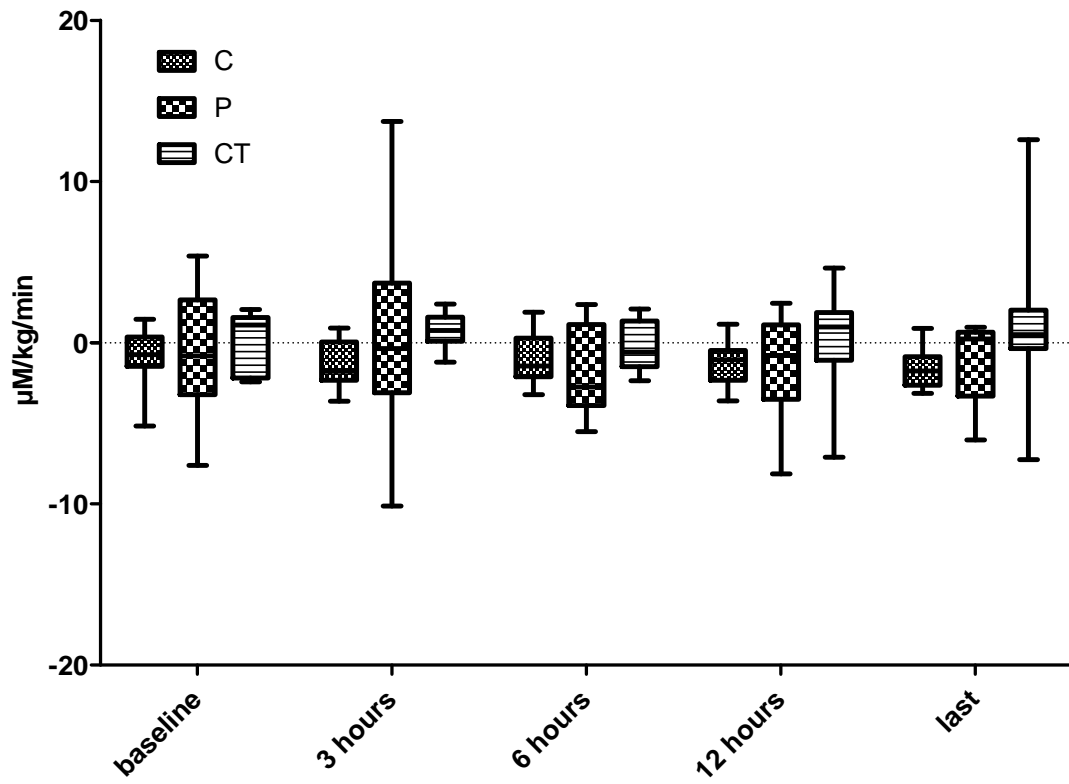
José Gorrasi¹, Anestis Eleftheriadis¹, Jukka Takala¹, Sebastian Brandt¹, Siamak Djafarzadeh¹,
Lukas Bruegger², Hendrik Bracht¹, Stephan M. Jakob¹

ES-Figure 1. Mesenteric lactate exchange.

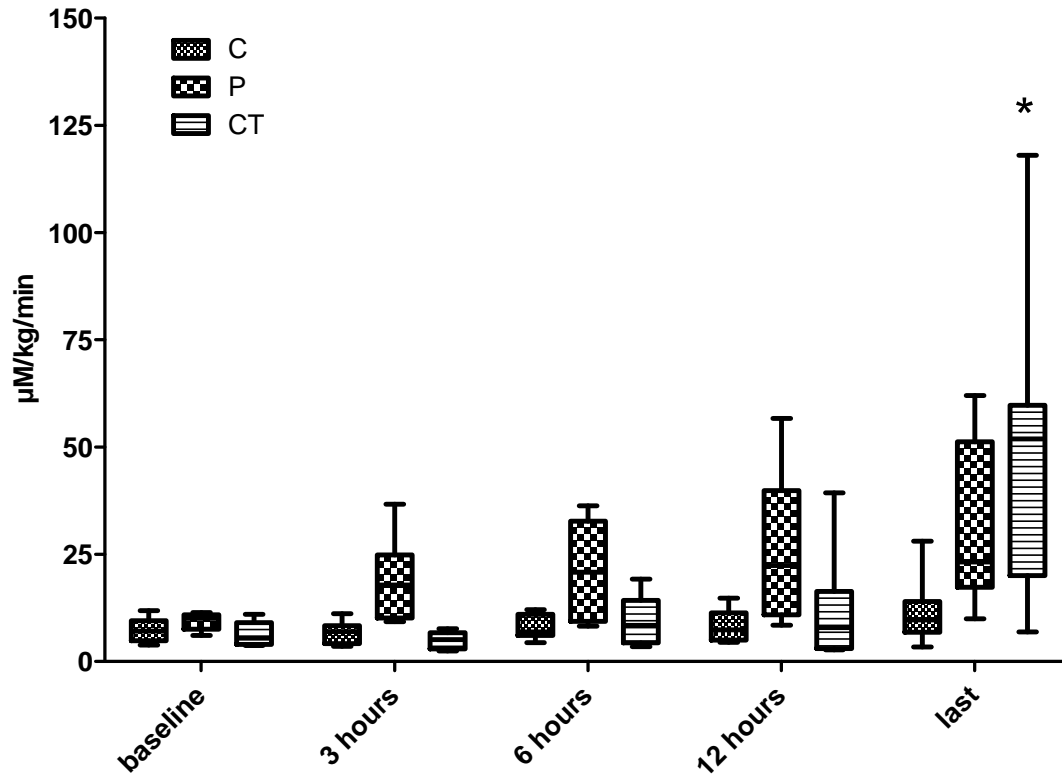


*Friedman Test.

ES-Figure 2. Renal lactate exchange

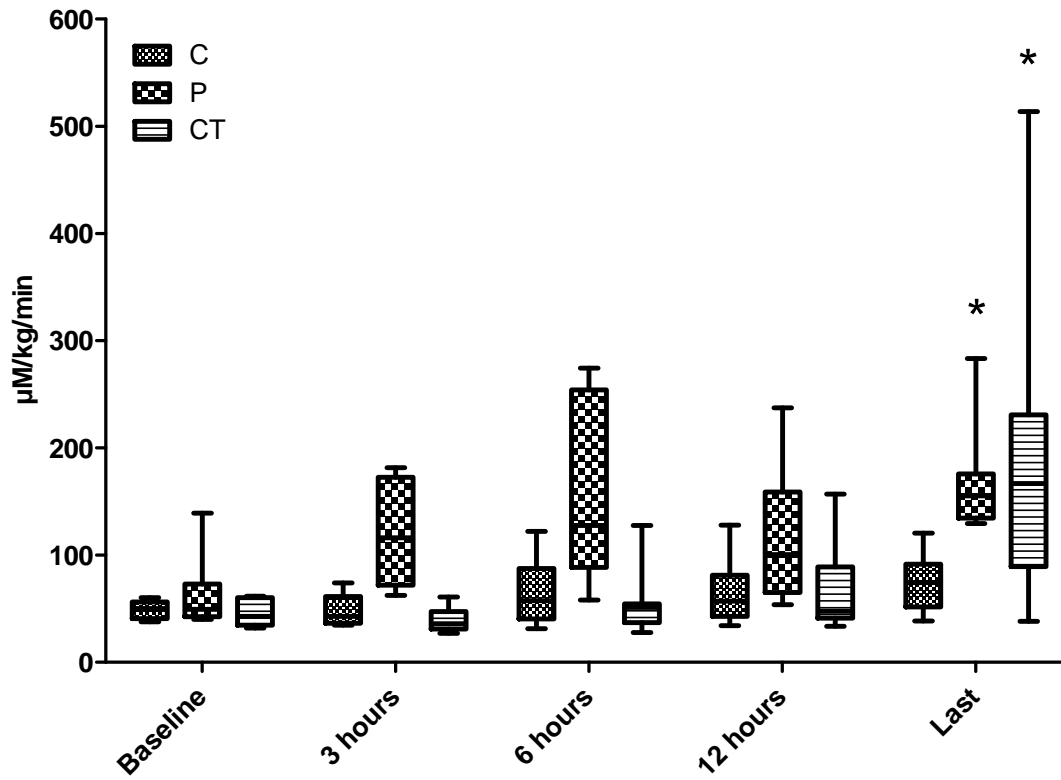


ES-Figure 3. Hepatic lactate efflux



*Friedmann Test.

ES-Figure 4. Whole body vein lactate efflux (lung lactate influx)



*Friedmann Test

ES-Table 1. Regional oxygen transport.

| | | N | Baseline | 3 hours | 6 hours | 12 hours | Last measurement | p* |
|-------------------------------|-------------|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-------|
| Hepatic oxygen consumption | Controls | 8 | 0.86 (0.68 – 1.18) | 0.96 (0.78 – 1.66) | 1.04 (0.69 – 1.38) | 0.84 (0.65 – 1.40) | 0.89 (0.37 – 1.34) | 0.116 |
| | Peritonitis | 7 | 0.94 (0.43 – 1.23) | 0.91 (0.23 – 1.22) | 1.09 (0.32 – 1.35) | 1.10 (0.38 – 1.50) | 1.25 (0.38 – 1.97) | 0.746 |
| | Tamponade | 7 | 0.82 (0.52 – 1.16) | 0.79 (0.61 – 1.26) | 0.74 (0.42 – 1.18) | 0.65 (0.24 – 1.18) | 0.47 (0.06 – 1.11) | 0.284 |
| Mesenteric oxygen consumption | Controls | 8 | 0.57 (0.40 – 0.68) | 0.63 (0.39 – 0.76) | 0.63 (0.37 – 0.85) | 0.62 (0.37 – 1.03) | 0.58 (0.33 – 1.02) | 0.681 |
| | Peritonitis | 7 | 0.65 (0.46 – 0.76) | 0.72 (0.42 – 1.04) | 0.58 (0.53 – 1.13) | 0.71 (0.38 – 0.88) | 0.55 (0.17 – 0.93) | 0.096 |
| | Tamponade | 7 | 0.61 (0.29 – 3.31) | 0.68 (0.50 – 1.77) | 0.68 (0.45 – 1.75) | 0.69 (0.63 – 1.49) | 0.76 (0.56 – 1.35) | 0.849 |
| Renal oxygen consumption | Controls | 6 | 0.17 (0.09 – 0.30) | 0.17 (0.08 – 0.28) | 0.23 (0.13 – 0.32) | 0.24 (0.12 – 0.45) | 0.13 (0.10 – 0.34) | 0.323 |
| | Peritonitis | 7 | 0.17 (0.14 – 0.38) | 0.21 (0.16 – 0.28) | 0.17 (0.13 – 0.21) | 0.19 (0.15 – 0.23) | 0.18 (0.09 – 0.52) | 0.438 |
| | Tamponade | 7 | 0.16 (0.07 – 0.34) | 0.14 (0.11 – 0.26) | 0.16 (0.12 – 0.30) | 0.16 (0.12 – 0.34) | 0.09 (0.04 – 0.26) | 0.041 |
| Spleen oxygen consumption | Controls | 8 | 0.02 (0.02 – 0.04) | 0.03 (0.01 – 0.04) | 0.03 (0.01 – 0.04) | 0.02 (0.02 – 0.04) | 0.02 (0.01 – 0.03) | 0.925 |
| | Peritonitis | 6 | 0.03 (0.02 – 0.05) | 0.03 (0.02 – 0.06) | 0.03 (0.01 – 0.04) | 0.03 (0.01 – 0.05) | 0.03 (0.01 – 0.05) | 0.687 |
| | Tamponade | 7 | 0.02 (0.02 – 0.03) | 0.02 (0.02 – 0.03) | 0.03 (0.02 – 0.05) | 0.03 (0.01 – 0.07) | 0.02 (0.02 – 0.05) | 0.150 |
| Hepatic oxygen extraction | Controls | 8 | 0.41 (0.24 - 0.62) | 0.57 (0.24 - 0.70) | 0.49 (0.25 - 0.66) | 0.38 (0.28 - 0.70) | 0.42 (0.26 - 0.58) | 0.681 |
| | Peritonitis | 7 | 0.36 (0.24 - 0.62) | 0.29 (0.13 - 0.48) | 0.36 (0.19 - 0.62) | 0.32 (0.26 - 0.56) | 0.56 (0.34 - 0.98) | 0.022 |
| | Tamponade | 7 | 0.44 (0.31 - 0.52) | 0.53 (0.39 - 0.80) | 0.49 (0.24 - 0.77) | 0.76 (0.19 - 0.79) | 0.75 (0.33 - 0.88) | 0.195 |
| Mesenteric oxygen extraction | Controls | 8 | 0.29 (0.17 - 0.35) | 0.30 (0.17 - 0.46) | 0.29 (0.16 - 0.46) | 0.31 (0.13 - 0.40) | 0.25 (0.16 - 0.50) | 0.809 |
| | Peritonitis | 7 | 0.35 | 0.30 | 0.27 | 0.28 | 0.32 | 0.938 |

| | | | | | | | | |
|---------------------------|-------------|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-------|
| | | | (0.24 - 0.41) | (0.24 - 0.50) | (0.18 - 0.47) | (0.22 - 0.46) | (0.22 - 0.59) | |
| | Tamponade | 7 | 0.32 (0.11 - 0.43) | 0.37 (0.29 - 0.46) | 0.40 (0.19 - 0.54) | 0.41 (0.35 - 0.59) | 0.61 (0.50 - 0.88) | 0.002 |
| Renal oxygen extraction | Controls | 6 | 0.27 (0.18 - 0.42) | 0.24 (0.19 - 0.46) | 0.26 (0.23 - 0.52) | 0.34 (0.24 - 0.50) | 0.37 (0.17 - 0.45) | 0.504 |
| | Peritonitis | 7 | 0.27 (0.18 - 0.50) | 0.30 (0.21 - 0.38) | 0.29 (0.24 - 0.43) | 0.29 (0.24 - 0.42) | 0.33 (0.28 - 0.58) | 0.133 |
| | Tamponade | 7 | 0.26 (0.14 - 0.40) | 0.33 (0.28 - 0.44) | 0.36 (0.29 - 0.44) | 0.42 (0.34 - 0.49) | 0.53 (0.39 - 0.92) | 0.001 |
| Spleen oxygen extraction | Controls | 8 | 0.20 (0.12 - 0.28) | 0.17 (0.05 - 0.39) | 0.18 (0.05 - 0.26) | 0.14 (0.06 - 0.26) | 0.13 (0.04 - 0.30) | 0.681 |
| | Peritonitis | 6 | 0.26 (0.11 - 0.43) | 0.29 (0.12 - 0.56) | 0.32 (0.10 - 0.43) | 0.35 (0.09 - 0.43) | 0.31 (0.13 - 0.60) | 0.785 |
| | Tamponade | 7 | 0.21 (0.16 - 0.30) | 0.27 (0.18 - 0.43) | 0.32 (0.08 - 0.43) | 0.43 (0.24 - 0.68) | 0.70 (0.43 - 0.94) | 0.001 |
| Femoral oxygen extraction | Controls | 8 | 0.51 (0.41 - 0.66) | 0.46 (0.28 - 0.79) | 0.40 (0.28 - 0.81) | 0.45 (0.38 - 0.72) | 0.52 (0.38 - 0.67) | 0.483 |
| | Peritonitis | 7 | 0.54 (0.39 - 0.66) | 0.36 (0.20 - 0.62) | 0.40 (0.13 - 0.68) | 0.58 (0.42 - 0.64) | 0.56 (0.43 - 0.70) | 0.323 |
| | Tamponade | 7 | 0.55 (0.41 - 0.75) | 0.67 (0.52 - 0.74) | 0.63 (0.45 - 0.76) | 0.72 (0.56 - 0.76) | 0.84 (0.76 - 0.94) | 0.010 |

All oxygen consumption rates are in ml/kg/min. *Friedman Test.

ES-Table 2. Regional pCO₂ gradients.

| | | N | Baseline | 3 hours | 6 hours | 12 hours | Last measurement | p* |
|--|-------------|---|-----------------------|-----------------------|----------------------|-----------------------|-----------------------|--------|
| Mixed venous-arterial PCO ₂ gradient | Controls | 8 | 8.0 (6.5 – 9.2) | 6.8 (5.3– 10.5) | 8.0 (1.7 – 12.1) | 8.1 (5.3 – 10.6) | 8.4 (4.6 – 12.9) | 0.910 |
| | Peritonitis | 7 | 7.7 (0.9 – 10.3) | 9.7 (6.1 – 12.5) | 10.0 (7.0 – 23.5) | 10.9 (7.2 – 11.9) | 10.9 (8.5 – 17.4) | 0.017 |
| | Tamponade | 7 | 8.7 (7.1 – 10.4) | 9.7 (6.5 – 14.0) | 10.3 (8.4 – 13.7) | 14.2 (10.4 – 16.7) | 20.9 (15.2 – 64.4) | <0.001 |
| Hepatic venous-arterial PCO ₂ gradient | Controls | 8 | 7.7 (6.1 – 10.8) | 7.5 (4.1 – 12.4) | 7.6 (4.6 – 13.4) | 7.8 (3.2 – 12.0) | 8.5 (5.0 – 16.9) | 0.897 |
| | Peritonitis | 6 | 8.5 (-1.50 – 14.5) | 10.7 (4.3 – 14.8) | 9.9 (7.2 – 23.7) | 10.7 (7.6– 16.4) | 12.3 (6.7 – 22.2) | 0.004 |
| | Tamponade | 7 | 7.7 (0.2 – 11.1) | 10.1 (4.00 – 15.9) | 10.6 (7.5 – 13.5) | 14.9 (10.4– 20.2) | 22.8 (14.0 – 72.0) | <0.001 |
| Portal venous-arterial PCO ₂ gradient | Controls | 8 | 7.4 (5.6 – 9.2) | 8.3 (4.2 – 10.2) | 7.3 (1.4– 12.0) | 7.6 (4.0 – 9.70) | 8.9 (2.6 – 10.3) | 0.775 |
| | Peritonitis | 7 | 8.5 (5.0 – 13.2) | 10.4 (4.3 – 13.2) | 10.5 (6.3 – 12.8) | 9.6 (5.8 – 15.3) | 11.1 (6.1 – 19.3) | 0.909 |
| | Tamponade | 6 | 7.6 (4.7 – 9.0) | 9.1 (7.9– 11.3) | 8.4 (7.1 – 12.3) | 13.2 (10.6 – 16.7) | 17.9 (13.6 – 74.4) | <0.001 |
| Mesenteric venous-arterial PCO ₂ gradient | Controls | 8 | 7.0 (4.7 – 10.2) | 9.0 (4.0 – 13.6) | 7.9 (3.8 – 12.4) | 8.2 (4.7 – 11.4) | 7.1 (4.2– 13.4) | 0.784 |
| | Peritonitis | 7 | 9.2 (6.8 – 15.3) | 9.5 (8.0 – 13.1) | 12.5 (6.2 – 22.8) | 10.2 (8.2 – 19.9) | 11.0 (7.5 – 20.9) | 0.932 |
| | Tamponade | 6 | 9.2 (7.8 – 14.1) | 11.5 (9.0 – 13.3) | 10.2 (5.9 – 17.5) | 15.4 (10.3 – 19.5) | 20.1 (16.8 – 46.0) | 0.002 |
| Renal venous-arterial PCO ₂ gradient | Controls | 7 | 5.4 (2.2– 9.4) | 4.8 (2.3– 7.1) | 4.1 (-0.5– 11.5) | 5.8 (2.8– 11.7) | 5.3 (2.2– 9.8) | 0.256 |
| | Peritonitis | 7 | 4.2 (2.3 – 11.1) | 6.4 (3.4 – 10.7) | 6.6 (3.7 – 17.9) | 6.0 (4.5 – 10.6) | 5.2 (3.4 – 14.9) | 0.300 |
| | Tamponade | 7 | 4.0 (1.8 – 8.0) | 3.8 (1.0 – 10.6) | 5.0 (3.5 – 9.8) | 7.0 (5.0 – 11.6) | 8.2 (4.3 – 71.2) | 0.001 |
| Femoral venous-arterial PCO ₂ gradient | Controls | 8 | 10.8 (8.6 – 12.8) | 9.6 (7.6 – 13.8) | 10.4 (3.2 – 15.6) | 11.1 (4.8 – 16.9) | 10.9 (6.5 – 25.5) | 0.827 |
| | Peritonitis | 6 | 11.8 | 10.7 | 15.5 | 15.2 | 15.6 | 0.121 |

| | | | | | | | | |
|---|-------------|---|-----------------------|-----------------------|-----------------------|------------------------|------------------------|-------|
| | | | (6.3 – 13.4) | (-0.4 – 18.7) | (4.0 – 24.5) | (9.8 – 16.4) | (10.6 – 23.7) | |
| | Tamponade | 5 | 11.8 (8.9 – 16.1) | 13.7 (11.8 – 17.5) | 13.7 (11.6 – 19.2) | 17.9 (15.6 – 20.1) | 25.0 (19.2 – 69.50) | 0.002 |
| Spleen venous- arterial PCO ₂ gradient | Controls | 8 | 4.5 (3.7 – 7.9) | 4.6 (1.6 – 9.4) | 5.0 (-2.0 – 8.7) | 4.2 (1.6 – 7.2) | 4.7 (1.2 – 11.2) | 0.914 |
| | Peritonitis | 5 | 6.5 (3.0 - 8.3) | 11.6 (3.9 - 15.0) | 13.6 (4.3 – 22.4) | 11.6 (3.9 - 18.5) | 6.5 (3.0 - 24.3) | 0.316 |
| | Tamponade | 6 | 5.0 (3.4 - 8.6) | 7.2 (4.4 - 9.6) | 8.2 (3.0 - 11.7) | 12.0 (7.1 - 18.6) | 16.1 (7.3 – 89.9) | 0.010 |
| Jejunal mucosal- arterial PCO ₂ gradient | Controls | 7 | 19.5 (-1.8 - 27.2) | 14.8 (8.8 - 23.7) | 21.5 (8.0 - 22.9) | 21.1 (7.4 - 70.6) | 30.2 (20.3 - 49.6) | 0.017 |
| | Peritonitis | 7 | 26.6 (15.4 - 72.1) | 31.5 (14.1 - 69.5) | 33.8 (12.7 - 56.3) | 50.4 (24.4 - 112.5) | 67.4 (12.5 - 112.5) | 0.005 |
| | Tamponade | 7 | 25.2 (15.4 - 72.1) | 34.0 (14.1 - 69.5) | 35.6 (12.7 - 56.3) | 71.6 (24.4 - 112.5) | 75.0 (12.5 - 112.5) | 0.014 |

All pCO₂ gradients are in mmHg. *Friedman Test.