Response to Letter to the Editor re "Abdominal Hypertension and Decompression: The Effect on Peritoneal Metabolism in an Experimental Porcine Study"

We thank Dr. Mynbaev and co-authors for their interesting comments on our publication and the presentation of their previous work. In rabbits undergoing mild CO_2 pneumoperitoneum (6–10 mm Hg), they showed that optimal mechanical ventilation reduced the pH and CO_2 Bohr effects on hemoglobin, thereby maintaining adequate arterial oxygen saturation and tissue oxygenation.[1] We agree with Dr. Mynbaev and colleagues that optimal ventilation is important in experimental animal research, and, as they noted in our study of severe CO_2 pneumoperitoneum (30 mmHg), the pigs were slightly hyperventilated at baseline (arterial pCO_2 of 3.9–4.1 kPa) and became hypercapnic to some extent (arterial Pco_2 of 5.7–6.4 kPa) throughout the experiment.[2] We believe however that the main results (increased intraperitoneal lactate/pyruvate ratio and glycerol levels at intra-abdominal hypertension [IAH] and normalization of the former after decompression) are independent of CO_2. When adjusting for the fixed acid Bohr effect,[3] the mean oxygen saturation of hemoglobin decreased from 95% at baseline to 89% during abdominal CO_2 insufflation, corresponding to a small reduction (<10%) of the oxygen delivery to, for example, the intestines. On the other hand, the intestinal blood flow is approximately halved at IAH, corresponding to a reduction of 50% of oxygen delivery to the intestines. Therefore, we believe that the major insult in our model is the IAH and subsequent circulatory changes, resulting in changed abdominal metabolism, rather than pH and Pco_2-induced hypoxemia. Likewise, similar changes in abdominal metabolites have been shown in IAH by fluid-filled abdomen in rats,[4] in CO_2 pneumoperitoneum (20–30 mmHg) in optimally ventilated pigs,[5] and in patients with IAH after ruptured abdominal aortic aneurysm repair.[6]

Again, we want to express our appreciation to Dr. Mynbaev for the interesting letter. Abdominal hypertension is still an area too poorly explored, and thrives on all attention.

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Re. 'Ultrasound Measurement for Abdominal Aortic Aneurysm Screening: A Direct Comparison of the Three Leading Methods'

We read with interest the article by Chiu et al. on three different methods of ultrasound (US) measurement of abdominal aortas: inner-to-inner (ITI), outer-to-outer (OTO), and leading edge to leading edge (LTL).[1]

The authors showed OTO measurement was the most accurate, and claim inter- and intra-observer variability was superior for OTO but not statistically significant. Statistical values have been omitted preventing assessment of data quality. The wide 95% confidence intervals on the standard deviation of the mean aortic diameters hint at a large skew in the data.

There are limitations in the technique. Static images were used, whereas live images are used in daily practice. Although a large amount of measurements were taken, only a small sample were used. No mention is made of the familiarity of the assessors with ITI or LTL technique, which could possibly explain the favourable outcomes for OTO measurement.

Hartshorne found variation between screening technicians was significantly lower when performing ITI measurements.[2] This study was used to design the national abdominal aortic aneurysm screening programme (NAAASP). Thapar showed the discrepancy between the ITI and OTO measurement could be as large as 6 mm.[3]

The issue of exclusion of sub-aneurysmal aortas from the screening programme is one of interest. The MASS follow-up data showed that the rupture rates increased in the screened population after 10 years, thus suggesting that

sub-aneurysmal aortas became aneurysmal and ruptured.[4] Wild showed that 96% of sub-aneurysmal aortas reached treatment threshold within 10 years.[5]

We do not support the authors' conclusion that there should be a change in screening technique on the basis of this small study. However, they add evidence to the inclusion of patients with sub-aneurysmal aortas to the NAAASP and perhaps the conclusions should reflect this.

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