Airway Pressures As A Surrogate For Intra-abdominal Pressure Measurement In Patients At Risk For Intra-abdominal Hypertension

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Abstract

Intra-abdominal pressure (IAP) measurements are essential to the diagnosis and management of patients with intra-abdominal hypertension (IAH) and abdominal compartment syndrome (ACS). Airway pressures, including peak inspiratory pressure (PIP), plateau pressure (Pplat), and mean airway pressure (Paw), are used by some clinicians as surrogate estimates of IAP. The current investigation evaluated the clinical interchangeability of airway pressure measurements and intravesicular pressure (IVP) in patients at risk for IAH / ACS. Mechanically ventilated surgical/trauma patients over 18-years of age with risk factors for IAH/ACS and indwelling urinary catheters underwent simultaneous triplicate measurements of PIP, Pplat, Paw, and IVP (as advocated by the WSACS consensus recommendations). The triplicate measurements were averaged. PIP, Pplat, and Paw were compared to IVP using both Pearson product-moment correlations and Bland & Altman Analyses. Thirty patients (mean age = 54 ± 17 years) were evaluated. Initial analyses revealed a significant correlation between IVP and Pplat as well as Paw, but not with PIP measures. Bland & Altman Analyses revealed significant agreement between IVP and PIP, but not with Pplat or Paw. These results suggest that airway pressures are poor surrogate measurements for IAP, therefore IVP should be used to monitor IAP in patients with or at risk for IAH/ACS.