

**Perbandingan Antara Nilai Indeks Variasi Gelombang *Plethysmography*  
dan Nilai Variasi Tekanan Pulsasi Arteri pada Pasien dengan Ventilasi Tekanan  
Positif di ICU RSUP Dr. Sardjito**

**INTISARI**

**Latar belakang:** Variasi tekanan pulsasi (VTP) memberi penilaian status cairan yang baik namun membutuhkan pemasangan jalur arteri dengan biaya mahal, sulit dalam pemasangan, dan resiko komplikasi berupa kematian jaringan juga infeksi. Sementara itu, indeks variasi *plethysmography* (IVP) yang memiliki kemiripan dengan variasi tekanan pulsasi yaitu muncul akibat denyut arteriol dan dipengaruhi oleh siklus pernapasan, namun bersifat tidak-invasif, mudah diterapkan, bahan lebih murah, dan tanpa resiko kematian jaringan maupun infeksi.

**Metode:** Penelitian ini menggunakan rancangan studi observasional prospektif. Kami mengukur VTP dan IVP pada 22 pasien terpasang mesin ventilasi dan jalur arteri radialis di ICU. VTP diperoleh dengan memasang jalur arteri yang terhubung dengan mostcare®. IVP diperoleh dengan memasang *probe* oximetry terhubung dengan masimo®. pada terpasang mesin ventilasi. Kami membandingkan VTP dan IVP menggunakan mann whitney dan mencari korelasi dengan koefisien spearman.

**Hasil:** Dua puluh dua pasien memiliki nilai VTP 11,7 (7,03) dan IVP 13,29 (7,76) tidak berbeda bermakna secara statistik ( $p=0,405$ ,  $p>0,05$ ). Terdapat korelasi sedang antara VTP dan IVP ( $r=0,55$ ,  $p=0,008$ ). Empat dari 22 pasien yang menerima norepinephrine (dosis = 0,125 mcg/kgbb/menit, rentang dosis 0,1-0,15), memiliki korelasi VTP dan IVP sebesar  $r=0,40$ . ( $p=0,60$ ,  $p>0,05$ ).

**Kesimpulan:** Tidak terdapat perbedaan yang signifikan antara antara indeks variasi *plethysmography* dengan nilai variasi tekanan pulsasi. Terdapat korelasi sedang antara antara nilai variasi tekanan pulsasi dan indeks variasi *plethysmography*. Tidak terdapat korelasi antara nilai indeks variasi *plethysmography* dan variasi tekanan pulsasi pada pasien yang menerima norepinephrine.

**Kata kunci:** indeks variasi *plethysmography*, variasi tekanan pulsasi, *intensive care unit*, norepinephrine.

## Comparison Plethysmography Variation Index Value and Pulsation Pressure Variation Value on Patients with Positive Pressure Ventilation at RSUP Dr. Sardjito

### ABSTRACT

**Background:** Pulsation pressure variations predicts fluid status accurately, but requires the installation of arterial line with high cost, difficult insertion, and the risk of complications such as tissue death as well as infection. Meanwhile, the plethysmography variation index has similarity with pulse pressure variation such as rise from distal artery pulsation and affected by respiratory cycle, but this is non-invasive, easy to apply, cheaper material, and without the risk of tissue death or infection.

**Methods:** It was a prospective observational study. We measured pulse pressure variation (PPV) and plethysmography variability index (PVi) in 22 mechanically ventilated patients with preexisting artery radial line in intensive care unit (ICU). PPV was obtained by connecting radial arterial line to Mostcare®. PVi was obtained by placing an oximetry probe on fourth finger and connected to the Masimo®. We compared PVi and PPV using Mann-Whitney and analyzed the correlations with Spearman coefficients.

**Results:** Twenty-two patients had PPV values of 11.7 (7.03) and PVi 13.29 (7.76), both are not significantly different ( $p = 0.405$ ,  $p > 0.05$ ). There was a moderate correlation between PVi and PPV ( $r = 0.55$ ,  $p = 0.008$ ). Four of the 22 patients who received norepinephrine (dose = 0.125 mcg/kg/min, dose range 0.1-0.15), had no a correlation of PVi and PPV ( $r = 0.40$ ,  $p = 0.60$ ,  $p > 0.05$ ).

**Conclusions:** There was no significant different between plethysmography variation index and pulse pressure variation. There was a moderate correlation between plethysmography variation index and pulse pressure variation. There was no correlation between plethysmography variation index and pulse pressure variation in patients receive norepinephrine.

**Keywords:** plethysmography variation index, pulse pressure variation, intensive care unit, norepinephrine