



Assessment of non-invasive forearm blood pressure monitoring in patients with a Body Mass Index (BMI) of 35 or more undergoing surgery



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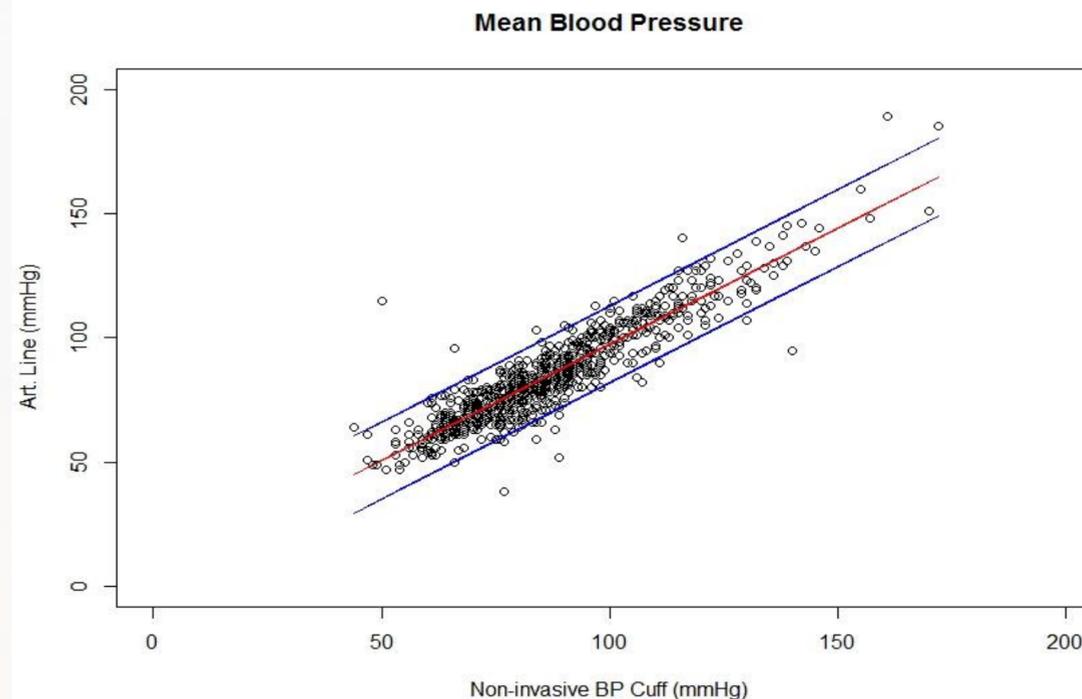
Introduction

Reliable measurement of arterial blood pressure in morbidly obese patients presents a challenge to the anaesthetist. Non-invasive (cuff) monitoring whilst being standard practice is often not feasible or practical in morbidly obese patients. Invasive arterial monitoring is an alternative but presents risks associated with insertion. Given that forearm blood pressure is easy to measure in obese patients, we decided to test its reliability as an alternative to upper arm blood pressure measurements. We compared serial forearm blood pressure against invasive blood pressure measurements in 51 obese subjects.

Methods

After approval from the local human ethics research committee, 50 patients aged 18 years or older, with a BMI of 35 or greater, undergoing elective surgery of sufficient complexity to warrant invasive blood pressure monitoring were recruited. Intravenous access, arterial cannulation, and forearm cuff pressure monitoring was applied to the same arm. Monitoring of no greater than 5 minute intervals were performed during surgery. Data was collected using the S5 Collect (GE) system and analysed with Microsoft Excel. Statistical analysis was performed with R Core Team (2013).

Results



50 subjects (35 female, 15 male) with a mean age of 50.6 years (range 21-81; median 50.6), mean BMI of 44.9 (range 35-61) were studied. Using a two one-sided test (TOST) technique, diastolic and mean BP showed agreement at the 5 and 10mmHg level, whilst for systolic measurement agreement was shown for a threshold of 10mmHg.

Conclusion

There was good agreement between invasive blood pressure monitoring and non invasive forearm measurements in 50 patients. We conclude that for situations where invasive arterial monitoring is not indicated, forearm NIBP is a reliable measurement of blood pressure in this group.

References

- Pierin AMG, et al. Blood pressure measurement in obese patients: comparison between upper arm and forearm measurements. *Blood Press Monit* 2004; ((3): 101-105.
- Stolt M, et al. Improved accuracy of indirect blood pressure measurement in patients with obese arms. *Am J Hypertension*. 1993; 6(1): 66-71.

