

Special Correspondence

A More Hygienic Method for Measuring Blood Pressure

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Background : Blood Pressure (BP) measurement is the commonest test performed in any healthcare facility. The same BP cuff is used for measurement of BP in many patients. The BP cuff can get contaminated with microorganisms¹. It may become a vector in transmission of communicable and infectious diseases. The Corona Pandemic has highlighted the needs to prevent transmission of infections by taking precautions in health care facilities. Disposable BP cuffs are available in Western Countries. Though they solve the contamination problem effectively, they are very expensive. To overcome the problem of contamination of the BP cuff, we propose to use a very thin plastic paper to cover the arm of the patient, to tie the BP cuff on the plastic paper so that the cuff does not come in contact with the patient's body.

Aim : To validate the accuracy of the BP measured after tying the cuff in such non contact manner. Settings and Design: The study was carried out at Dr Rajeev Raut Eye Clinic with consent obtained from Ethics Committee. 50 patients underwent BP measurement in supine position with and without the plastic wrap around the arm. The results of BP measurements thus obtained were statistically analysed.

Results : The BP measurement obtained with the wrap and without the wrap were not found to be statistically significantly different.

Conclusions : The BP measurements obtained using a Polyvinyl Chloride (PVC) cling film wrap covering the arm are similar to those obtained without the use of the wrap. However, further studies are needed to prove the reduction in contamination rate.

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Key words : BP measurement, BP cuff, PVC cling film wrap.

Blood Pressure (BP) measurement is a commonly performed procedure in almost all Healthcare settings which provides essential information to aid diagnosis and monitoring. The Sphygmomanometer is an important tool for clinical assessment but it can become contaminated by micro-organisms. Also the same BP cuff is used for many patients, thereby increasing the chances of infection. Communicable diseases have come to the forefront of Medical Science once again, with the Corona Pandemic. BP cuff may act as an important vector for transmission of diseases.

In a study conducted by Dr Joseph Eldor in Jerusalem, it was found that 80% BP cuffs are contaminated on their inner as well as outer surfaces². Bacterial Colonisation rate of up to 82% was found. Though disposable one time use BP cuffs is an ideal way to prevent the cuff from becoming vectors for organisms, it may not be economically feasible for all healthcare facilities in developing Countries like India to adopt such a procedure.

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Editor's Comment :

- Blood Pressure cuff can act as vector for many communicable diseases.
- Preventing contact between BP cuff and patients body and clothes is important. This can be achieved by wrapping a thin plastic clingwrap paper around the arm and applying the BP cuff on the plastic wrapper.
- Study shows that BP measurement performed using this method does not affect accuracy of the BP measurement. Further steps need to be explored to avoid the contamination of the tubing in the clinic environment.

We propose wrapping PVC cling wrap around the arm and then tying the BP cuff over the wrap to prevent direct contact of the BP cuff with the patient's body, to prevent contamination of the BP cuff. The accuracy of BP measured by this method was recorded, and it was compared with BP measured without the plastic wrapper by statistical analysis.

MATERIAL AND METHOD

The study was conducted during October, 2020 – December, 2020. Approval for the study was taken from the Ethics Committee. 50 consecutive patients undergoing BP measurement were included in the study. All patients were included and there were no exclusion criteria. An informed consent was taken from all the patients.

A very thin plastic sheet is available as a role and is used by households to wrap food before putting it in the refrigerator. It is readily available, inexpensive and the plastic is biodegradable. The film is very thin (11 microns). It can be wrapped around the patient's arm with ease. When it is disposed, it being very less in volume, produces a very small plastic waste.

The paper was wrapped around the arm, and the BP cuff was tied over the wrap. The cuff was tied snugly and neatly onto the patient's arm, 2 cm above the Brachial Artery, aligning the artery index marker on the cuff with the Brachial Artery. The blood pressure was measured for all patients with and without the wrap, in supine position. In first 25 patients, the wrap was tied around the arm and BP was measured and recorded. Next, the wrapper was removed and BP was recorded over the same patient over the same arm.

In the next 25 patients, BP was measured without the plastic wrap first. Then the cling film wrap was wrapped around the arm, the cuff was tied over the wrap and BP was measured again and recorded. The 100 readings thus obtained were subjected to statistical analysis.

OBSERVATIONS

There was no statistically significant difference in the BP obtained with and without the use of the PCV cling wrap. Paired two tailed 't' test was performed P value (0.15).

DISCUSSION

Blood Pressure Measurement is one of the most commonly performed medical tests in the World. It is a critical measure, providing information that is used for many purposes, including determining whether a patient is at increased risk for developing Vascular Disease because of Elevated Blood Pressure. Accurate BP Measurement is the foundation of optimal

diagnosis and treatment of Hypertension. Ill persons visit healthcare facilities. Vomit, blood, sweat and spit of patients can come in contact with BP cuff at times. In Operation Theatres, BP cuff is continuously tied to the arm, and is exposed to possible contamination from body fluids. Studies have shown very high contamination rates in BP cuffs. Disposable BP cuffs are not economically feasible though ideal. A technique of measuring BP while minimising the contact of the cuff with the human body is therefore highly desirable.

Modifying the method of measuring BP by using PVC cling film around the arm of the patient, though not as ideal as use of disposable BP cuff, provides a more hygienic method without sacrificing accuracy. However, further studies regarding the rate of contamination using this non contact method are desirable.

Limitations and Drawbacks of Study :

BP Measurements used in the study does not include children under 12 years of age. The study does not include patients with extremely low or very high BP measurements that may be seen in Intensive Care Units and Operation Theaters.

While the cling film prevents contact of the bp cuff with the patients body, the tubing connect the cuff to the main machine still remain exposed. Additional exploration of technoques to prevent tubing contact and contamination are necessary.

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