Clinical evaluation of 3M™ SpotOn™
A new non-invasive and continuous temperature monitoring system

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/ BACKGROUND

Adequate core temperature monitoring is required for appropriate management of patients undergoing surgery with regional or general anesthesia. None of the currently used non-invasive monitoring methods has been proved to be accurate enough for routine perioperative use.

A prototype deep tissue thermometry system agreed with pulmonary arterial blood temperature in patients undergoing cardiac surgery(1).

GOAL: to assess the agreement of temperature data from SpotOn™, (3M Company St. Paul, MN) a new zero-heat flux non-invasive temperature monitoring system, with simultaneous measurements from an esophageal temperature probe, in patients undergoing a variety of surgical procedures with general anesthesia.

/ METHODS

After Ethics Committee aproval and written informed consent, 34 patients undergoing surgical procedures with general anesthesia were studied. All patients were warmed using a convective air system starting at the time of arrival at the operating room until PACU transfer.

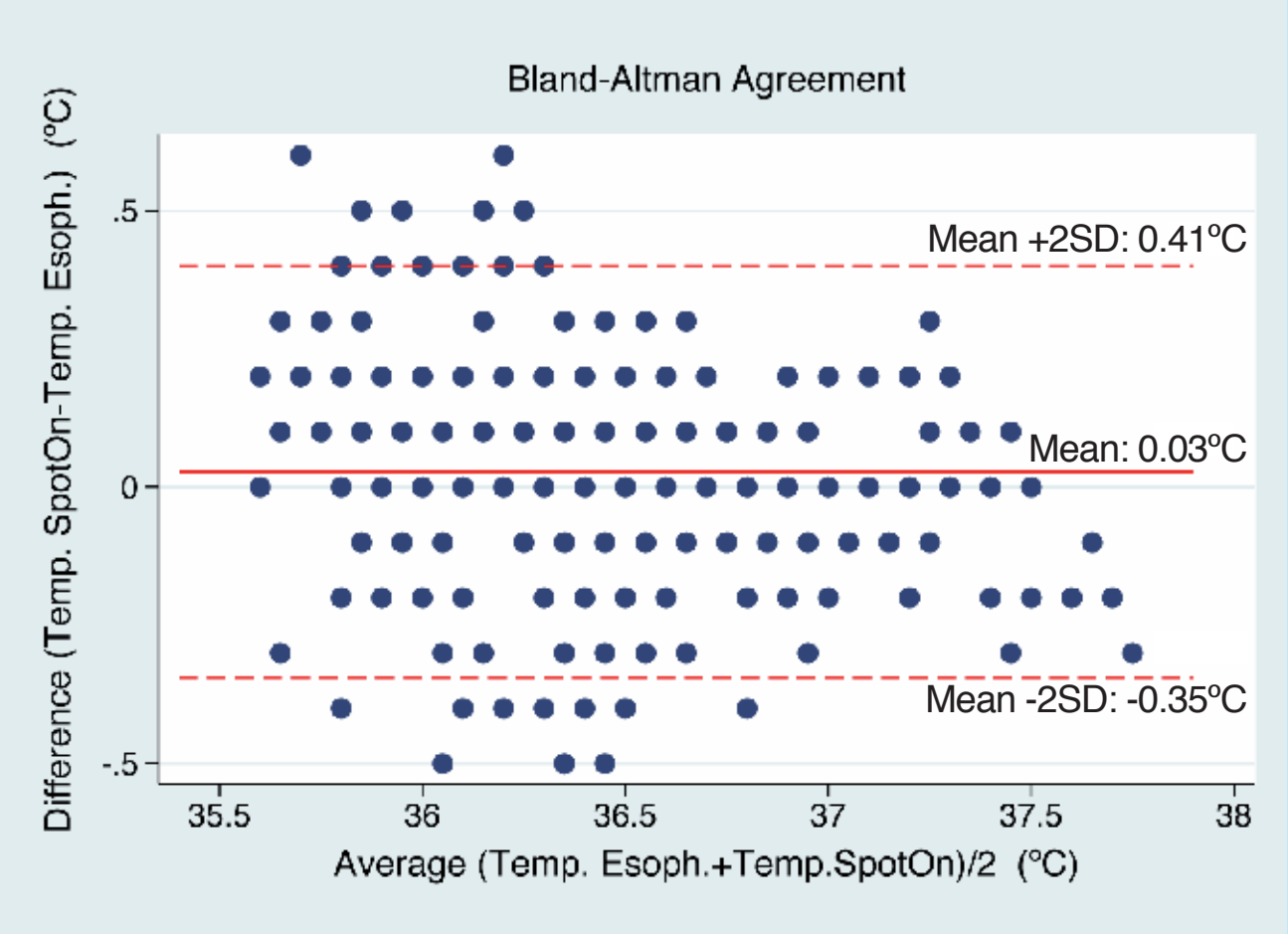
Spot On™ sensor was placed on the lateral forehead. A ten minute time interval was allowed for thermal equilibration after sensor was applied.

/ PATIENT DATA (mean ± standard deviation and range)

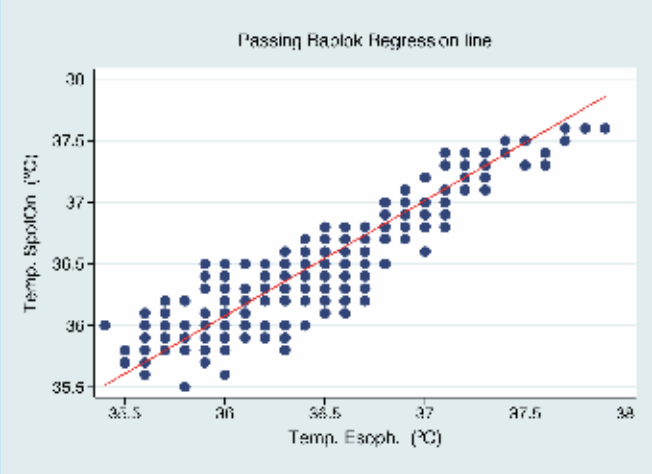
	MEAN±SD	RANGE
Age (years)	54.61± 18.13	(6-83)
Weight (kg)	70.91 ± 16.24	(23-105)
Height (cm)	167.47 ± 11.68	(120-187)
BMI (kg/m²)	25.04 ± 4.71	(15.97-40.50)
Duration of surgery (min)	115.88±47.34	(40-220)

SURGERY	PATIENTS (34)
General	10
Thoracic	7
Orthopedics	7
ENT	5
Neurosurgery	4
Urology	1

/ RESULTS



- Bias (SpotOn™ - Esophageal) was 0.03 °C and 95% limits of agreement -0.35/+0.41.



- Passing-Bablok regression line showed that both methods are comparable because there are no constant or proportional differences.
- Lin´s concordance correlation coefficient of absolute agreement was 0.91.

/ CONCLUSIONS

- Temperature measured by SpotOn™ system agrees with esophageal temperature, producing a bias (SpotOn™ - Esophageal) of 0.03°C and 95% limits of agreement of -0.35/+0.41.
- This results support SpotOn™ as a clinically aceptable system to non-invasively measure core temperature in the perioperative period.

/ REFERENCES

Eshraghi Y, Sessler, DI. Anesthesiology 2012; A639

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