SURFACE COOLING FOR INDUCTION OF MILD HYPOTERMIA IN CONSCIOUS HEALTHY VOLUNTEERS

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In 16 healthy male volunteers (range 21-47 years), esophageal temperature decreased from baseline median 36.2°C (IQR 35.9 to 36.6°C) to 35°C within median 53 minutes (IQR 44 to 83 minutes), indicating a median cooling rate of 1.1°C/h (IQR 1.0 to 1.5°C). The minimum temperature reached was median 34.4°C (IQR 34.1 to 34.4°C). No shivering or discomfort of the attending volunteers was observed.

Methods

After baseline measurements, Pethidine (1 mg/kg bolus, followed by 30 mg/h intravenously), and Buspirone (30 mg orally) were given to prevent shivering. The cooling units were applied on back, thorax, abdomen, and tights of the volunteers, until a core temperature of <35°C was achieved. Then the cooling units were removed. After six hours of maintenance cooling, the volunteers were covered with a blanket and allowed to re-warm.

Results

In 16 healthy male volunteers (range 21-47 years), esophageal temperature decreased from baseline median 36.2°C (IQR 35.9 to 36.6°C) to 35°C within median 53 minutes (IQR 44 to 83 minutes), indicating a median cooling rate of 1.1°C/h (IQR 1.0 to 1.5°C). The minimum temperature reached was median 34.4°C (IQR 34.1 to 34.4°C). No shivering or discomfort of the attending volunteers was observed.

Conclusion

Non-invasive surface cooling is feasible and well tolerated in conscious healthy volunteers, and might be an easy and effective cooling methods for awake patients with stroke or myocardial infarction.

Figure: Temperature curves of all 16 subjects

Temperature measurement was established by an esophageal temperature probe.