

Research Article

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Hypothermia and the outcomes in emergency department

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Abstract

Hypothermia is defined as a core temperature less than 35 which is commonly seen in patients with loss of consciences. It increases the mortality due to impaired cardio respiratory function, peripheral vasoconstriction, bleeding diathesis, metabolic acidosis, diminished hepatorenal function and impaired immune response. We decide to investigate the prevalence of hypothermia and its relationship with patients' outcome considering the problem mentioned and inadequate attention to hypothermia. Investigation was done in 100 emergent patients who presented to Iran university hospital, Tehran, Iran. This descriptive study was done during 4 month; tympanic infrared thermometer was used to measure the temperature. The temperature was measured 0.1 and 6 hr. after arrival and then gathered data was processed by SPSS statistical software. Our goal was to find the relation between patients' core temperature and their outcomes in emergent patients. Some other data such as mortality and need for critical care or ward admission, was also included. Hypothermia was detected in 35.3% of the patients. There was significant correlation between hypothermia and mortality $P; 0.002$. Hypothermia was more prevalent in patients who were died but there was no significant correlation between hypothermia and the need for critical care length of stay.

Keywords: Hypothermia, Emergency department.

Introduction

Hypothermia is defined as a core temperature less than 35 .which is commonly seen in patients with loss of consciences. Signs and symptoms of hypothermia consist of shivering, tachycardia, tachypnea, and vasoconstriction. Accidental hypothermia thus has detrimental effects on many body systems and organs that are important to survival post injury.¹

Admission hypothermia is associated with increased mortality following major trauma.²⁻⁴

Generally hypothermic patients are actively rewarmed as part of established remedy protocols. These rates vary significantly from 0.20°C to 2.95°C/h.^{5,6}

The purpose of the current investigation was to determine the prevalence of hypothermia in patients on emergency department admission and the effect of hypothermia on patient outcomes.

Material and Methods

The study population included the patients who were referred Iran university hospital, Tehran, Iran. 2014. The patients' temperature was gathered by tympanic infrared thermometer 0.1 and 6 hour after arrival.

All subjects gave their consent to participate in the study. This study was conducted in accordance with the Declaration of Helsinki and good clinical practice according to International Conference on Harmonisation guidelines.

Statistics

For statistical analysis, data were entered to MS-excel spread sheets. The procedures included were transcription, preliminary data inspection, content analysis and finally interpretation. Investigators used percentages to clarify epidemiological variables [SPSS software, Version 15, Chicago, IL, USA (chi square and t test)]. P value of less than 0.05 was defined as significant.

Results

The study populations include 100 patients involving 64 (64%) male and 36 (36%) female patients. Among these patients 36 patients were hypothermia which 21(58%) were male and 15 (42%) were female.

The mean \pm SD age of patients was 59.5 ± 16.9 yr. patients divided to three groups including bedridden 14 (14.6%), 6 (6.3%) undetermined and 76 patients (79.2%) with general conditions (table 1). The past medical histories of these series are summarized in table 2.

Table 1: Different group of study population

	Number	Percent
Bedridden	14	14.6
Undetermined	6	6.3
General	76	79.2
Total	96	100

Table 2: The past medical histories of these series

	Number	Percent
Diabetes mellitus	7	9.1
CVA	20	26
Chronic renal failure	6	7.8
Cardiovascular	18	23.4
Endocrine	2	2.6
Others	24	31.2
Total	77	100

The main reason of refer in hypothermic patients was loss of consciousness (39%) and sepsis (22%). Among 29 patients whom had loss of consciousness 14 patients (48%) were hypothermia which 8 of them died.

Among 4 multiple trauma patients 2 of them were hypothermia and both of them were expired.

Among hypothermia patients 8 were Brady card (22%) , 4 j wave (11%) and 1 ventricular fibrillation. There was significant difference between the initial core temperature of the patients which were alive and dead (p; 0.04).

Discussion

Emergency department crowding is one of the main issues facing emergency physicians, nurses, and their patients, in most developed countries. It has been proposed that emergency department crowding is the equilibrium state of the current health care system in the world.⁷⁻¹²

Therefore in this research we evaluate the hypothermia and its outcomes on patients' management in the emergency department. It increases the mortality due to impaired cardio respiratory function, peripheral vasoconstriction, bleeding diathesis, metabolic acidosis, diminished hepatorenal function and impaired immune response.

The presence of hypothermia on admission was correlated with more mortality rate but there was no significant correlation between hypothermia and the need for critical care length of stay . These results show that in the

emergency departments it is necessary to have reliable evaluation of the patients' temperature. Some studies indicated that rewarming the patients can have better outcomes.¹³⁻¹⁶

The use of therapeutic hypothermia has been indicated in different forms of brain injury, specifically hypoxic postcardiac arrest and neonatal hypoxic encephalopathy, to be beneficial in reducing mortality and improving outcomes.¹⁶⁻²⁰

Full consideration and discussion about the therapeutic hypothermia is beyond the scope of this article (for further information on the topic investigators can use references number 5, 21-23).

Further studies on more patients are needed to confirm the outcomes and provide the different source of investigations.

Conclusion

This study showed that Hypothermia was more prevalent in patients who were died but there was no significant association between hypothermia and the need for critical care length of stay.

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