Effect of Sevoflurane on Peripheral Perfusion Index Derived from the Oximetry Signal in Children.

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Introduction

A peripheral perfusion index (PI) based on analysis of the pulse oximetry signal has been implemented in monitoring systems as an index of peripheral perfusion. Few data on the variation of this index in normal children are available. Influence of anesthetic drugs have not been described in this group of age. This study aimed to evaluate the influence of sevoflurane on PI in children undergoing wound dressing under general anesthesia without tracheal intubation.

Patients and Method

After approbation of our local IRB and inform consent obtained from their parents 40 children scheduled for elective surgery were included in this prospective study. Standard monitoring was used (EKG, Blood pressure, PetCO2) and a pulse oximetry sensor was connected to a Masimo Radical-7™ monitor that provide a PI value. Anesthesia induction was then realized with sevoflurane 2% increased progrssively to 6%. Age, weight, Heart rate (HR), PI, SpO2 were recorded before induction, at the end of induction and at the end of procedure. A statistical analysis was performed usisng he Statview© software (SAS institute inc., Cary, NC, USA). Data were expressed as mean (min-max). An ANOVA was realized considered statistically significant at the 5% level ($p<0,05$).

Results

Mean age was 11 months (range 5-21), mean weight was 10kg (range 6-15). SpO2 did not vary. HR decreased significantly. PI increased during induction and then decreased. PI value vary greatly according to time.

Discussion

PI has been suggested to reflect changes in peripheral perfusion. PI variations were observed despite the normovolemic status of the patients. Therefore these variations can probably be linked to the vasoactive effect of sevoflurane. Influence of sevoflurane, but also other anesthetic drugs, has to be considered before any interpretation of the PI in children during general anesthesia. Difficulty in clinical use comes also from the frequent and instantaneous variations of the PI value. This index presents a potential utility in situations where hemynamics are compromised but also as a witness of sevoflurane impregnation.

Evolution of SpO2, heart rate and perfusion index

	SpO2	HR	PI
Before induction	99	143	1,8
After induction	99	125	3,91
End of procedure	99	127	1,89
p	NS	<0.001	<0.001

p = ANOVA