



Sevoflurane downregulates interleukin-6 and interleukin-8 levels in patients after cardiopulmonary bypass surgery: a meta-analysis

Q.B. Yu¹, H.M. Li¹, L.L. Li¹, S.Y. Wang¹ and Y.B. Wu¹

¹Department of Cardiosurgery, Fuwai Hospital, Chinese Academy of Medical Science and Peking Union Medical College, Peking, Beijing, China

Corresponding author: Y.B. Wu
E-mail: wuyongbo1013@163.com

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ABSTRACT. This study aimed to investigate the effect of sevoflurane on serum levels of interleukin (IL)-6 and IL-8 in patients who underwent cardiopulmonary bypass (CPB). The strength of the association between sevoflurane treatment and serum level of IL-6 and IL-8 was determined in patients who underwent CPB by summary standard mean differences (SMDs); 95% confidence interval (CI) was used. In total, seven case-control studies showed decreased IL-6 and IL-8 levels in sevoflurane-treated patients than in controls (IL-6: SMD = 1.56, 95%CI: 0.95-2.17, $P < 0.001$; IL-8: SMD = 2.17, 95%CI: 1.40-2.95, $P < 0.001$, respectively). Further, IL-6 and IL-8 levels were significantly higher in sevoflurane-treated patients than in sevoflurane-pretreated patients (IL-6 post vs pre: SMD = 2.17, 95%CI: 1.40-2.95, $P < 0.001$; IL-8 post vs pre: SMD = 4.01, 95%CI: 2.80-5.21, $P < 0.001$, respectively). CPB-stratified analysis showed significant decrease in IL-6 and IL-8 levels in sevoflurane-treated patients than in controls, irrespective of the time after CPB surgery ($P < 0.05$).

Moreover, sevoflurane-pretreated patients under the <12-h subgroup showed decreased IL-6 levels ($P = 0.698$), while all other subgroups showed decreased IL-8 levels ($P < 0.05$). Further, subgroup analysis by different dose of sevoflurane showed decreased IL-6 and IL-8 levels in subgroups administered with a dose of <2 and $\geq 2\%$ sevoflurane under the case vs control and pre- vs post-treatment of sevoflurane models. Serum IL-6 and IL-8 levels were significantly lower in sevoflurane-treated patients who underwent CPB, suggesting sevoflurane pretreatment to be more beneficial than post-treatment.

Key words: Interleukin-6; Interleukin-8; Sevoflurane; Meta-analysis; Cardiopulmonary bypass