Modelling the PSI response in general anesthesia

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Abstract

In anesthesia automation, one of the main important issues is the availability of a reliable measurement of the depth of consciousness level (hypnosis) of the patient. According to this value, the hypnotic drug dosage can be adequately calculated. One of the most studied hypnosis indexes is the bispectral index (BIS). In this article we analyzed an alternative called patient state index (PSI). The objectives of this study are, first, to validate the accuracy of the PSI describing the hypnosis level during the maintenance phase of general anesthesia, by comparing with the BIS and, second, to model the relationship between propofol infusion rate and PSI values, obtained from a SEDLine monitor. For this, real data from patients undergoing general anesthesia simultaneously monitored with both BIS and PSI signals was used. Results obtained are interesting for a correct interpretation of PSI signal in clinical practice.