Introduction

Awareness and Intra-operative Explicit Recall (IOER) are uncommon situations during general anesthesia. Its incidence has been reported 0.1 to 0.01% and the risk to present IOER is deemed higher in severely ill patients under total intravenous anesthesia (TIVA).

For the purpose of this work, we consider Awareness when the patient becomes conscious during a procedure under general anesthesia, while IOER is the patient’s postoperative ability to retrieve memories stored during the procedure. Awareness and IOER can lead to postoperative morbidity; post-traumatic stress disorder, sleep disturbances, nightmares, flashbacks and fear to future anesthesia and surgery [4].

Statistical Analysis. Categorical variables were described as absolute and relative frequencies, and continuous variables as median and interquartile range (IQR). Comparisons between IOER status were assessed by Fisher’s and Mann-Whitney’s U tests, respectively. Local RIB approved the trial and informed consent was obtained from patients’ relatives.

Methods

After RIB approval (July 2011), all patients in ICU who were intubated, under mechanical ventilation, free of cerebrogenic or metabolic cause that could preclude postoperative evaluation and receiving surgical procedures in ICU were eligible.

Patients were evaluated for eligibility and a relative was asked to provide informed consent for the inclusion in this study. All patients received TIVA at the anesthesiologist discretion. BIS monitoring (Covidan, Mansfield, MA) was started just before anesthesia. Its display was concealed to the anesthesiologist. An independent physician registered vital signs, drugs used, BIS score and surgical events at intervals of 2.5 min during the procedure and postoperative period for up to 90 min in total. According to protocol, if the BIS score was reduced over 60 during surgery the anesthesiologist was informed. Severity of illness was assessed by means of APACHE II score at admission. IOER was assessed by one of the investigators in structured postoperative interviews at 2-4 hours, median 7-242 (6-70) days after the procedure adapted to Spanish by Suarez and Vazquez [12]. In the absence of sedation or disorientation (BIS score < 70), the patient was asked:

What is the last thing you remember before you went to sleep?

What is the first thing you remember when you wake up?

Did you dream whilst you were asleep?

Do you remember any other thing between falling asleep and awakening?

Recruitment started in August 2011 for the pilot phase, and July 2013 for the main phase with the last patient recruited in July 2015.

Results

43 patients were included in the study (table 1) they had 49 procedures, 22 male and 21 female with a mean weight of 61 kg, and a height of 160 cm. Their ASA physical status was 3 (27 cases), 62.8% or 4 (16 cases), 37.2% preoperatively. The ASA score of 8 or above was present in 21 (43.7%) cases. Mortality occurred in 11 cases (26.6%) no patient died during Anesthesia management (see table 1). The day of the procedure all patients were under mechanical ventilation (oro-trachal tube or tracheostomy).

Table 1. Demographic data of patients during 49 surgical procedures performed at ICU, under TIVA

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Median (IQR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>51 (63)</td>
</tr>
<tr>
<td>Weight (Kg)</td>
<td>82 (70)</td>
</tr>
<tr>
<td>Intraoperativeexplicit recall (IOER)</td>
<td>No</td>
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<tr>
<td>Mortality (%)</td>
<td>25.6%</td>
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</table>

Discussion

This is a small cohort of very ill patients in whom awareness is difficult to identify; we found an extremely high incidence of IOER in this population. We choose this group because we had to deal with this specific patient population. Our group performed similar to Spanish report in which the sub-group of mixed anesthesia (N2O based) with or no use amnesic agent was a risk factor of 10% of awareness with recall [1].

Usual risk factors do not emerge as related to IOER in our work, but the small numbers preclude any firm conclusions of analysis in order to better categorize this issue. Other groups found risk factors to be: younger cases, female gender, obstetric or cardiac procedures, receiving fewer anesthetic drugs and showed more episodes of tachycardia or hypertension during the procedure [4] higher ASA status and TIVA tool for awareness monitoring, which has not used general acceptance, when anesthetic awareness is performed [4].

Clinical clues used by anesthesiologist during the surgical procedure did not allow them to identify the risk of postoperative awareness. The report of IOER can vary through time, patients seem to forget events they had been able to recall early in postoperative period, or to recall later events related to the surgical experience. We cannot rule out other explanations, the incidence rate of low intensity of presence-moment generation [11] and it is validated in Spanish by a Chilean group [12]. Structured interview has been shown to have a higher sensibility than standard quality assurance reports [13] or spontaneous complaints.

Weaknesses: Small cohort study. Lack of association with known risk factors can be due to beta error. Some investigator registered intraoperative events and performed postoperative interviews. Attitude of anesthesiologist was not constant over time. Drugs used in the anesthesia management were not standard. Neither doses

External validity of this finding is restricted to very ill patients, chronically sedated, under mechanical ventilatory support which many severely ill patients frequently need surgical procedures. This constitutes a major challenge for the anesthesiologist. We need to develop better tools to identify awareness and to prevent IOER.

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References