Rapid Sequence Intubation from the Patient's Perspective

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Introduction: This study assesses the efficacy of the rapid sequence intubation (RSI) protocol in preventing patient recollection of resuscitative events and patient discomfort during intubation, as subjectively determined by the patient.

Methods: This was a prospective study of all patients intubated at Los Angeles County, University of Southern California Medical Center from July 2009 to January 2010. Extubated patients were interviewed using a standard questionnaire and data collection tool.

Results: Of 211 airway codes, 201 were excluded due to death before extubation, transfer, or persistent vegetative state, leaving 10 awake, alert subjects who were interviewed regarding their recollection of the RSI and resuscitation. Five had recollection of the event. Most patients recalling RSI described the event as painful or uncomfortable despite receiving the recommended doses of sedation/induction agents.

Conclusion: In this cohort of 10 patients intubated using typical agents, 5 remembered some details of their intubation and 2 described pain that was 10/10 on a verbal pain scale. Further work is indicated to ensure that the medications used during this procedure provide the appropriate sedation and amnesia. [West J Emerg Med. 2011;12(4):365–367.]

INTRODUCTION

Rapid sequence intubation (RSI) involves administration of a sedative and a neuromuscular blocking agent during intubation to aid both the patient and the physician. Ideally, the patient should not experience pain or recall the intubation, and the physician should have optimal conditions for intubation as described by parameters such as increased ease of jaw opening and laryngoscopy, relaxation of the patient's vocal cords, and decreased patient reaction to intubation with coughing or limb movement.[1] RSI increases the success rate, ease, and safety of emergent intubation and is currently the standard of care in emergency medicine airway management.[2] While there are numerous articles dealing with recall in the anesthesia literature, there is a paucity of research regarding the effectiveness of RSI in preventing patient recollection during intubation in the emergency department.[3–8] Bispectral index, a computer-derived index determined from electroencephalography, has been used to monitor the level of awareness of sedated patients during procedures in the emergency department but has not been an unequivocally reliable measure of clinical sedation.[9,10] Research on recollection from the patient's perspective during long-term intubation in the intensive care unit suggests that recall of stressful experiences is a significant issue.[7]

Recollection of RSI can be likened to anesthesia awareness, the explicit memory of events occurring while under anesthesia. For those patients experiencing anesthesia awareness, the psychological sequelae of recollection can be quite dramatic. These sequelae can be short term, such as nightmares or daytime anxiety, or can develop into posttraumatic stress disorder (PTSD).[8,11] Recollection of RSI may also revive suppressed memories of trauma or abuse, or it

can cause patient hesitation and anxiety for further medical procedures.[12]

This study was designed to assess the efficacy of the RSI protocol in preventing patient recollection and discomfort during intubation, as subjectively determined by the patient.

METHODS

Study Design

This was a prospective study, approved by the University of Southern California Institutional Review Board, using a standardized survey and chart review to assess patient recollection.

Setting

Our medical center is a level I trauma center with an annual census of 160,000 patients.

Selection of Participants

At our institution, emergency medicine physicians respond to all "Code Blue" and "Airway Codes" on the floors of the hospital. These events are recorded on an event sticker by the resident, faxed to the department of emergency medicine, and then entered into a database. From this database, we obtained the list of patients intubated in the hospital. These patients were followed in the hospital until death, discharge, or extubation. Extubated patients were approached for permission to conduct an interview and for permission to gather data from their medical records.

RESULTS

During the study period from July 2009 to January 2010, 211 airway codes were called. Of these patients, 80 patients expired without being extubated, 68 were discharged or transferred prior to being interviewed, 48 patients were not eligible for the study (based on criteria including persistent brain injury; status as a minor, jail, or psychiatric patient; interpretation difficulty), and 5 refused to participate. Of the remaining 10 patients, 5 recalled the experience of being intubated and rated their level of awareness at 3.6 (out of 10, with 10 being "fully awake"). Two patients reported specific pain, and both rated that as 10/10. Two other patients recalled the event, 1 stating that she remembered the physician stating that she was "knocked out." Following are specific comments from 3 of the patients who recalled the event:

It was a bad experience because there was a lot of pain.
I remember being real uncomfortable.
I remember laying down and having them put a tube in my throat.

All patients with a recollection of the event had received typical doses of both paralytic (succinylcholine dose 140 mg to 160 mg) and induction medication/sedative (etomidate 30 mg).

DISCUSSION

Half of the patients we interviewed during this brief study did not recall the RSI procedure, corroborating the idea that either the RSI medications or the declining health of the patient around the time of RSI are effective in preventing the patient from remembering pain or discomfort associated with the intubation. However, 5 of the patients did remember being intubated, with 4 describing their experiences as painful or uncomfortable. For these patients, psychological sequelae are a very real possibility, and, in fact, even a single patient with a recollection of the RSI procedure is 1 patient too many.

Much of the current research on the psychological sequelae following medical procedures centers on anesthesia awareness, or the explicit memory of events while a patient is under anesthesia. This research shows that while anesthesia awareness is a rare event, it certainly has profound consequences for those patients experiencing it. Feeling pain during surgery has been described as the most distressing event for patients, but other frequent complaints have been recalling audible events during surgery and feelings of paralysis, fear, panic, and impending death.[8] These experiences can have immediate sequelae, such as nightmares, sleep disturbances, or daytime anxiety, which may subside or may develop into PTSD. Patients who do not express immediate mental distress may still develop PTSD years later, exhibiting higher divorce and unemployment rates, as well as irrational or criminal behaviors.[11] Patients may also be extremely reluctant to trust physicians or to undergo medical procedures again, fearing a similar experience.[8]

Although the experience of anesthesia awareness during surgery may not be identical to the experience of recalling RSI, many of the feelings patients may have are similar, including pain, feelings of paralysis, panic, choking, gagging, and helplessness. These feelings alone may cause the above-mentioned psychological sequelae, or they may evoke memories of previous trauma or abuse.[12]

Finally, there is a common supposition that declining health around the time of RSI aids in inhibiting patient recall of procedures and that patients who are already unconscious at the time of RSI may have less recall of events than patients who were induced. In this study, most of the patients who recalled RSI were conscious before RSI medications were administered; however, this was true for most of the patients intubated during the study period, and lack of detailed information of the events surrounding RSI, especially documented patient level of consciousness, precludes more in-depth analysis of this assumption. Our data are inconclusive in this regard, and further research is necessary.

LIMITATIONS

One limitation of this study is the small sample size. Over the course of the study, many potential patient interviews were lost because of poor outcome, discharge before interview, or exclusion. Successfully interviewing a greater percentage of

the patient population of interest would allow a more in-depth assessment of our findings.

CONCLUSION

This study calls into question our belief that the medications that we give during rapid sequence may not prevent conscious recollection of RSI events and patient discomfort during RSI. For these patients, debilitating psychological sequelae are a concern. Further research is necessary to determine what specific changes to the RSI protocol would eliminate recollection in all patients.

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