SHORT REPORT

Airway management in patients with a broadcomplex tachycardia requiring electrical cardioversion: a postal survey

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This study was to determine whether or not ED and ICU consultants would intubate an unstarved, haemodynamically unstable patient with a BCT requiring electrical cardioversion, and to determine the incidence of complications for both intubating and not intubating based on the responders personal experience. 174 postal questionnaires were sent to ED and ICU consultants in the Wessex and South West regions of England. They were asked whether or not they would intubate a patient that required electrical cardioversion for a BCT with hypotension. 139 responded: 77 (56%) elected to intubate the patient always or most of the time, 34 (24%) would rarely or never intubate the patient, and 28 (20%) would only do so sometimes. Responders were aware of significant complications from both intubating and not intubating such a patient. Intubation for an unstarved patient with a haemodynamically compromising BCT would seem to occur on a variable basis. ED consultants were more likely to sedate such a patient without intubation whereas ICU consultants were more likely to intubate them.

It is a well established anaesthetic practice that unstarved patients require intubation when anaesthesia is required urgently in order to protect the airway from regurgitated stomach contents during a procedure.¹ However, our personal experience of the airway management for unstarved, haemodynamically unstable patients because of a broad-complex tachycardia (BCT) seems to vary between clinical practitioners. The United Kingdom Resuscitation Council guidelines 2001² state that for a BCT “anaesthesia or appropriate sedation” is necessary to facilitate electrical cardioversion. However, there is no further explanation for how this should be achieved. The UK Academy of Medical Colleges published a report on safe sedation, which states that if sedation is used, and verbal responsiveness is lost, the patient requires a level of care identical to that needed for general anaesthesia.³

We reviewed the literature and found no papers that addressed this scenario.

The aim of our survey was to determine whether Emergency Department (ED) and Intensive Care Unit (ICU) consultants would intubate an unstarved, unstable patient with a BCT.

METHODS

A questionnaire was posted to all ED and ICU consultants in the Wessex and South West regions of England in September 2003. The ED consultants were identified using the BAEM 2002 directory. The ICU consultants were identified by contacting the switchboard of all hospitals in this region

and asking them for the names of the current intensive care consultants.

The questionnaire described a hypothetical scenario in which a 76 year old male with a BCT was hypotensive. He was not starved, but predicted to be an easy intubation and had a potassium level of 4.5 mmol/l. He specifically required electrical cardioversion.

The questionnaire asked if the responder would intubate the patient always, most of the time, sometimes, rarely, or never. Subsequent questions asked about complications they had experienced or known about from intubating or not intubating such a patient. Other factors influencing their decisions were also questioned.

After two months a second questionnaire was sent to all non responders in order to attempt to increase the response rate. All questionnaires were reviewed by an Emergency Medicine Specialist Registrar (LG) who was unaware of the responder's identity and the data entered onto a Microsoft Excel spreadsheet.

RESULTS

A total of 174 questionnaires were sent to 66 ED and 108 ICU consultants and 139 (80%) completed questionnaires were returned. A little more than a half of the respondents, 77 (56%), would intubate the patient always or most of the time whereas 34 (24%) would rarely or never do so (table 1).

The distribution of the five response categories differed between ED and ICU consultants ($p < 0.001$ using the χ^2 test for linear trend) with ED consultants being less likely to intubate.

There was an even split between ED consultants who would intubate the patient always or most of the time, 20 (38%), and those who would rarely or never do so, 21 (40%). On the other hand, the majority 52 (68%) of ICU consultants would intubate the patient always or most of the time and only 11 (14%) would rarely or never do so. The difference between ED and ICU consultants in this decision was statistically significant ($p < 0.002$).

There was also a difference in the level of sedation desired to perform electrical cardioversion between ED and ICU consultants who would rarely or never intubate the patient and this difference in distribution was statistically significant ($p = 0.01$ using Fisher's exact test) (table 1).

For complications, 25 (18%) were aware of cardiac arrest following intubation whereas 27 (19%) were aware of aspiration in patients who were not intubated.

The quantity of food previously ingested was stated to be a factor that would influence the decision to intubate or not for 46 (33%) of responders and 61 (44%) of responders stated

Abbreviations: BCT, broadcomplex tachycardia; ED, emergency department; ICU, intensive care unit

Table 1 Results of the completed questionnaires returned (total 139: 52 emergency department consultants; 77 intensive care unit consultants; 10 no speciality stated)**Number who would intubate**

Always: 51/139 (37%)

Most of the time: 26/139 (19%)

Sometimes: 28/139 (20%)

Rarely: 28/139 (20%)

Never: 6/139 (4%)

Subspeciality analysis (always, most of the time, sometimes, rarely, never)

ED (52): 10 (19%), 10 (19%), 11 (21%), 16 (31%), 5 (10%)

ICU (77): 37 (48%), 15 (19%), 14 (18%), 10 (13%), 1 (1%)

Unknown (10): 4 (40%), 1 (10%), 3 (30%), 2 (20%), 0 (0%)

Level of sedation desired for those who rarely/ never intubate

ED (21): 6 (respond to voice), 12 (responds to pain), 1 (unresponsive), 2 (no answer)

ITU (11): 1 (respond to voice), 4 (responds to pain), 6 (unresponsive)

Known complications of intubation

Worsened hypotension: 66/142 (47%)

Cardiac arrest: 25/142 (18%)

Other: 3/142 (2%)

Known complications of not intubating

Aspiration: 27/142 (19%)

Prolonged airway support: 16/142 (11%)

Significant desaturation: 14/142 (10%)

that the actual degree of hypotension would influence this decision.

DISCUSSION

There were no trials or case series found by electronic search of the medical literature that were relevant to the airway management of patients with a BCT. Several studies had been performed comparing different operators for electrical cardioversion;⁴⁻⁶ one study reviewed the adequacy of sedation only,⁷ and a number compared different anaesthetic induction agents.⁸⁻⁹ With the exception of one study, the patients were all starved and had elective cardioversion of atrial fibrillation/flutter without haemodynamic compromise. One study⁴ assessed the safety of ED doctors performing electrical cardioversion of all tachyarrhythmias presenting acutely. The study included 53 patients and 7 of these patients presented with a BCT, but there was no mention of whether they had been starved or of their haemodynamic status. They were sedated without intubation and no complications occurred. Unfortunately this was a very small study of patients with a diversity of tachyarrhythmias and different operators and it would be unwise to conclude that this practice could be applied to our scenario.

Our survey suggests that there is a diversity of opinion on whether or not an unstarved, haemodynamically unstable patient because of a BCT should be intubated. It also revealed that a large proportion of consultants were aware of clinically significant complications of both intubating and not intubating these patients. It was certainly interesting to note that 18% were aware of a cardiac arrest occurring around the time of intubation; however, it was unclear whether respondents were simply stating these complications as a theoretical risk. Unfortunately a major weakness of the questionnaire was it did not differentiate between complications because of the anaesthetic/sedative drugs and laryngoscopy with tracheal intubation. Most of the commonly used anaesthetic induction agents have negative inotropic effects on the heart and cause peripheral vasodilatation, which can cause deleterious effects on an already compromised cardiovascular system. Thus it is possible that the responders were aware of cases of worsened hypotension and cardiac arrest that were because of the drugs themselves rather than the procedure of intubation.

Clinically significant aspiration during anaesthesia is relatively rare but can have devastating and even fatal consequences. It is well known that this is a real possibility when anaesthesia is induced on an unstarved patient who is not subsequently intubated even though the procedure itself is brief. A review article on anaesthesia for cardioversion by Stoneham¹⁰ states that intubation should be undertaken for this procedure in the emergency scenario if the stomach is full in order to prevent aspiration. However, in the emergency setting preprocedural fasting is not feasible, particularly in a patient who is cardiovascularly compromised, and there are no reported cases of aspiration during sedation for procedures undertaken in the ED setting.¹¹ This may simply reflect negative publication bias and so we wished to determine whether ED or ICU consultants were aware of this complication. Our survey revealed that nearly 20% of responders were aware of aspiration occurring when patients had been anaesthetised/sedated for emergency electrical cardioversion and had not been intubated.

ED consultants were more likely to sedate these patients without intubation (40% of ED), whereas ICU consultants were more likely to intubate them (68% of intensivists). When sedation was performed by emergency consultants, two thirds of patients were sedated to a level where the patient still responded to pain and a third to a level where verbal communication was maintained. Interestingly, more than half of those intensivists who would not intubate this patient would sedate to a level of unresponsiveness.

One can only speculate as to the reasons for this very different practice, but it may be simply that emergency consultants are not comfortable performing unsupervised rapid sequence intubation and are confident in the reported safety of sedation in unstarved patients. ICU consultants on the other hand are used to intubating patients and are possibly wary of aspiration as a complication.

CONCLUSION

This survey suggests that there is diversity in the practice of intubation for unstarved, haemodynamically unstable patients requiring electrical cardioversion for a BCT. Emergency consultants are more likely to sedate these patients whereas ICU consultants are more likely to intubate them. There was a significant incidence of known complications from both intubating and not intubating these patients.

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