Reflection on critical care of copd patient

Foundations of critical care.

Introduction

The aim of this essay is to present a situation in describing my experiences caring for am identified female patient, and reflecting upon the issues which arose during one shift in a Critical Care unit. The reflective analysis will be carried out using Johns model of reflection (1995) which incorporates Carper's fundamental ways of knowing. This includes aesthetic, personal, ethical and empirical knowing and re flexibility. The purpose of the reflection is to understand better the ways of knowing applied to the situation, and to build upon this knowledge to improve future practice. Case Description.

The chosen patient is a 59 year old female with a history of COPD and asthma. For the purposes of this essay, she will be called Jane. Jane had a severe infective exacerbation of COPD, which resulted in PEA Cardiac arrest in the admission medical unit secondary to type 2 respiratory failure, although it was a brief period of output loss only. Jane was intubated and transferred to the critical care unit, and since then she has had difficulty being ventilated due to bronchospasm/air trapping. At the time that I took over care for this patient, she had been on the critical care unit, on ventilatory support, for 12 days.

Reflection (based on John's Model and Carper's Fundamental Ways of Knowing).

AESTHETIC KNOWING:

As I came on shift, the ventilation mode was on BIPAP, ASB 15, PEEP 10, I: E 1: 3, FIO2 . 65 via tracheostomy tube. Upon assessment at the beginning of the shift her BP 110/40, map was 60mmhg despite of noradreanline, and core temperature was 38. 6 with improving markers of inflammation. The CVP had fallen to 8, but there was good urine output, 45-70 mls per hour over the previous four hours, with hourly urine measurements continuing. There was an intercostal drain in situ for a pneumothorax which developed post subclavian line insertion. Jane was sedated on midazolam and morphine sulphate infusion. She wass also paralysed with Vecuronium infusion to optimise ventilation, in the light of the previous difficulties. Jane was also on noradrenaline and actrapid insulin infusion, both of which aimed to maintain homeostasis. She was fed via nasogastric tube with Osmolite 60mls/hr with water 50 mls/hr, the latter because her sodium level had been rising when the serial U+Es were reviewed. I also noted also her heart rate rising up to 148b/m, and was aware that she had had an episode of SVT on the previous day, with a loading dose of amiodarone having been given on that day.

Having noted these findings, I reported to the Doctor that the patient may be dehydrated and need significantly increased fluids, perhaps an IV fluid challenge, as it had been noted that her CVP was declining, that she was hypotensive, and that urine output had started to tail off . This finding was supported by the fact that the patient was tachycardic. In response, the doctor prescribed 500mls of Gelofusin and an amiodarone infusion for 24 hours to be restarted.

The care of this patient involved frequent, close observations, and these were what initially alerted me to the changes in the patient’s condition. The

reduced central venous pressure was the first indicator, which was accompanied by consistently low blood pressure readings. This was despite the patient being medicated with noradrenaline, which should have brought about an increase in blood pressure and CVP. These, accompanied by the tachycardia, made me wonder whether the patient might be dehydrated, quite severely. The plan for the shift then became to give the patient a fluid challenge, in the form of the Gelofusin infusion, and to optimise her electrolyte levels, monitor and correct her pc02, and improve her positioning to improve V/Q mismatch. It was my responsiblity to report to the doctor or nurse co-ordinator if there were any untoward changes with the patient’s observations.

There were a lot of issues surrounding the care of such a patient, and I believed that I was making decisions based upon previous experiences, a degree of previously developed innate knowledge, and other knowledge, including empirical knowledge. However, I also felt that it was hard to combine all the observations, results, care plans, orders and the like into an overall consciousness of the patient’s current condition. This leads into the next section of the reflection, that of personal knowing.

PERSONAL KNOWING:

The personal knowing relates to some innate knowledge, and this is based on experience. I have in past practice previously looked after patients who were haemodymically unstable and needed prompt intervention. In fact, I felt a degree of confidence with this kind of patient. However, this was different to having to look after a long term complicated case, a woman who

had demonstrated such difficulty to ventilate (due to broncho- spasm/air trapping), was challenging. The fact that the patient was paralysed, with a vecuronium infusion was something entirely new to me, which caused concern and a little distress.

However, from my previous experience I felt very strongly that thei patient might require fluid challenge due to the observations already discussed. I was concerned that day if it was left untreated for much longer, Jane patient might develop metabolic acidosis, and potentially acute renal failure due to hypoperfusion and hypovolaemic shock due to the decrease in circulating volume. I identified this as an opportunity to be proactive, and although everyone around me seemed more concerned with oxygen pressures and ventilation, I felt that it was important to consider other aspects of the patient’s condition as well. ETHICAL KNOWING

Ethical knowing in this case was very acute, because of the level of dependence of the patient, who was dependent on nursing and medical staff for every one of her activities of daily living. Addressing one of these needs that I sensed other staff may have overlooked meant that I was able to be proactive. Discussing with the doctor that the patient might need a fluid challenge made me feel that I had acted as an advocate for my patient, but also that I had made good use of the knowledge I already had, even if I did not feel I had enough specialist knowledge to address some of the patient needs. The patient’s social and emotional needs were also an important part of ethical knowing. Jane lives alone, and her sister is her next of kin. Her sister kept calling the unit for any changes, although she was already updated by the medical team every day, and talking with the sister helped to

ensure that I was aware of Jane as a person, and also able to make sure that those who needed to know were involved as much as possible in her care. EMPIRICAL KNOWING.

I was aware that institution of high level of PEEP in the ventilator decreases blood return to the heart and cardiac output as the PEEP ventilation generates positive intrathoracic pressure. However, the symptoms persistently suggested hypovolaemia (Kelly, 2005). I was also aware of other issues, such as the need to increase oxygen pressure, but the ABG tests carried out every six hours demonstrated good oxygen pressures. However, I had to learn about the implications of ventilation on the cardiovascular system.

“ Ventilation can profoundly alter cardiovascular function via complex, conflicting, and often opposite processes. These processes reflect the interaction between myocardial reserve, ventricular pump function, circulating blood volume, blood flow distribution, autonomic tone, endocrinologic responses, lung volume, intrathoracic pressure (ITP), and the surrounding pressures for the remainder of the circulation”. (Pinsky, 2005 p 592s).

One of the most significant issues surrounding empirical knowing in this case was the need to understand all the potential complications of having a patient in such a condition, paralysed and receiving the high levels of PEEP in order to maintain ventilation. The literature shows that there are a number of issues surrounding mechanical ventilation. For example, Putenson et al 2006) state that mechanical ventilation generates an increase in airway

pressure and, therefore, an increase in intrathoracic pressure, which may decrease systemic and intra-abdominal organ perfusion, which may have significant effects on homeostasis an organ function. Critically ill patients can therefore develop a systemic inflammatory response that culminates in multiple-organ dysfunction syndrome and death, which suggests that the symptoms that Jane was displaying, and the findings from the electrolyte levels, could have been related to a more serious bodily response to mechanical ventilation. I did not know about this possible response to mechanical ventilation, until I carried out a literature search, and so would not have been aware that the findings were possibly linked to this kind of serious response.

Kollef (2004) suggests that for all patients who are intubated/ventilated, there are a number evidence-based interventions which focus on the prevention of aerodigestive tract colonization which can result in one of the serious complications of ventilation, that of ventilator-associated pneumonia. These include avoidance of unnecessary antibiotics, stress ulcer prophylaxis, chlorhexidine oral rinse, selective digestive decontamination, short-course parenteral prophylactic antibiotics in high-risk patients, and the prevention of aspiration of contaminated secretions, with preferred oral intubation, appropriate intensive care unit staffing, avoidance of tracheal intubation with the use of mask ventilation, application of weaning protocols and optimal use of sedation to shorten the duration of mechanical ventilation, semirecumbent positioning, minimization of gastric distension, subglottic suctioning, avoidance of ventilator circuit changes/manipulation, and routine drainage of ventilator circuit condensate (Kollef, 2004).

Obviously a key element of empirical knowing for me in this situation is about the haemodynamic monitoring, which has been so important in assessing this patient (Pinsky, 2003). The literature says that ongoing and dynamic haemodynamic monitoring is important in judging the response to the treatment, including the fluid challenge (Hadian and Pinsky, 2007). Michard (2005) states that " mechanical ventilation induces cyclic changes in vena cava blood flow, pulmonary artery blood flow, and aortic blood flow. At the bedside, respiratory changes in aortic blood flow are reflected by " swings" in blood pressure whose magnitude is highly dependent on volume status." (p 419).

Another element however that is very important is the administration of the fluid challenge. Fluid challenges are common in a range of nursing situations (Vincent and Weil, 2006). According to Michard (2005), " the expected hemodynamic response to a fluid challenge is an increase in cardiac preload and, according to the Frank-Starling mechanism, an increase in stroke volume and cardiac output" (p 423). This should be evident in a blood pressure increase and a reduced heart rate. However, there is the danger of fluid overload, and therefore administering a fluid challenge must be carried out carefully.

Vincent and Weil (2006) propose that fluid challenges should follow a protocol should include four variables: the type of fluid administered; the rate of fluid administration; the critical end points; and the safety limits. The choice of fluid was gelofusine, which is a colloidal fluid useful for volume replacement because of its unique properties (Vincent and Weil, 2006),

Vincent and Weil (2006) state that using a structured approach to fluid challenges would be best, in order to correct fluid deficits and minimize the risks associated with fluid overload. It is important to monitor patient response closely (Vincent and Weil, 2006).

When gelofusine was given her CVP increased and blood pressure and urine output improved. Her potassium, magnesium sulphate and Phosphate were topped up during my shift, and electrolyte levels were stable. Her heart rate went down to 110bpm since amiodarone infusion was restarted. She was on a few other medications, which potentially affect the potassium levels such as hydrocortisone, insulin actrapid infusion, salbutamol nebuliser and theophyline via NGT, which in addition can also cause arrrhythmias.

REFLEXIBILITY.

I learned a lot about basic nursing care activities, and in particular, the importance of time management. Time management is an important element of managing such a complex case, because it requires specific measurements, observations and recordings at specific times, whilst also managing emergent issues, maintaining records, and liaison with other members of the multidisciplinary team. Good patient assessment also emerged as a key learning point, and promoting a safe working environment, particularly in relation to all the aspects of care that posed challenges, such as managing drains, lines, infusion machines, monitoring morphine as a controlled substance, and also keeping contemporaneous records. These were all very challenging and made me feel under pressure to somehow keep juggling all the different tasks and demands, and still have time to

reflect and think about the overall picture. Record keeping helped with this, but it seemed that critical care of such a patient requires the development of specific capabilities, which must mean that such multi-tasking and multi-awareness gets easier over time.

The level of vigilance required in order to anticipate and be ready for any emergent changes in Jane’s condition was significant, and required a great deal of concentration and focus. I also learned that it was important to work with confidence and collaborate with the multidisciplinary team. However, maintaining communication with the team was very difficult given all the demands on my time.

One of the issues here was also whether or not Jane still needed mechanical ventilation, and during this shift, there was no discussion of when or whether she would be weaned off the ventilator. As she was paralysed, there was no indication of whether or not she would be trying to breathe with the ventilator, and how good her respiratory function might be. 12 days on the ventilator is a significant amount of time, and some literature suggests that earlier weaning from ventilator support may be possible in a lot of cases (Dasta et al, 2005). However, there was no indication of this, but similarly, there was no indication that this was a palliative care case (Mularski et al, 2006).

If I had had more knowledge and understanding of this kind of nursing, and in particular, of the details and implications of Jane’s condition, I might have considered whether or not, as her advocate, I should be asking about the continued need for ventilation, particularly in the light of other possible

approaches, such as non-invasive ventilation (Don et al, 2007). My discussions with other, more experienced members of staff, however, showed that the kinds of knowledge that most informed their care in this situation were experiential knowledge developed over a significant period of time. Therefore, it seemed to me that the empirical knowledge discusses above needed to be tempered with experience, which includes the experiences that come from working with more experienced and knowledgeable colleagues.

Another issue which arose was about learning how much of my nursing practice is based upon good communication skills and developing a relationship with the patient, neither of which were useful or appropriate in this case. Although communication with ventilated patients is a focus of critical care nursing (Bergbom-Engberg, and Haljam, 1993), in this case I found it strange to work without including the patient in my care, whilst I also realised that the patient needed my advocacy more than any other, because they could not be involved or speak for themselves.

However, the role of the critical care nurse in managing mechanical ventilation is something which became very apparent during this experience. The literature shows that critical care nurses have high levels of autonomy and responsibility in relation to mechanical ventilation, and that “ critical care nurses were responsible for the majority of the decision

episodes that resulted in a change to ventilator settings, ranging in complexity from the simple titration of FIO2 to a decision to commence weaning” (Rose et al, 2007 p 440).

CONCLUSION

This reflection has looked at the care of a client in the critical care nursing sector, who, after an infective exacerbation of COPD had to have a tracheostomy and be ventilated. I identified potential markers of dehydratrion, and presented these conclusions to the doctor in charge, who prescribed regulatory medication and a fluid challenge with Gelofusine. I administered the fluid challenge, infusing at the prescribed rate of 500 mls over 2 hours, and noted an improvement in central venous pressure, blood pressure and mean arterial pressure. An improvement in hourly urine output was also noted. It was also important to monitor electrolyte balance, and arterial blood gases, all of which improved with therapeutic intervention.

The care of the client highlighted a number of issues for me as a nurse. The first is the value of this kind of reflection in highlighting my knowledge and my learning processes. Gustafson and Fagerberg (2004) highlight how important structured reflection is to professional development, and in this case, using a structured process of reflection has highlighted my knowledge base, learning needs, learning process, and the application of nursing knowledge which is more than empirical knowledge, to a specific clinical scenario. Jones (1995) suggests that reflection is a part of the development of true nursing expertise. This has proved to be correct in relation to the learning that has occurred during this reflection. It has shown that understanding the effects of mechanical ventilation required more than simply monitoring observations and test values, but understanding that ventilation can affect cardiovascular function, and that this can be affected by haemodynamic status. Although previous knowledge and experience

indicated that the patient's condition was likely due to hypovolaemia (potentially secondary to dehydration), there were a number of other mechanisms that might have affected this.

It also became apparent that the role of the nurse in this situation is more than to simply monitor vital signs and infusions, ventilator functions, urine output and general wellbeing, attending to the activities of daily living. When a patient is paralysed and ventilated, unconscious due to sedation, the role of the nurse is to act in their stead, in their best interests, to be their advocate and to ensure plans of care are implemented which not only meet patient needs but anticipate them. Rolfe (2005) describes reflective practice as a deconstructive process, which allows nurses to question practice and ways of working. This process has identified a range of nursing issues related to this case, and shown that nothing is a simple matter of managing one condition in critical care nursing, it is part of an overall focus on patient-centred care.

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