method for many applications of peripheral nerve blocks in order to achieve an increase of success rate and to reduce the risk of complications.

Methods. In order to perform ultrasonic guided interscalene brachial plexus blocks, the use of transducers with frequencies between 7.5 and 12 MHz are essential for good quality imaging. The sonographic image of peripheral nerves is described either as hypoechoic or hyperechoic. There are several reasons that influences the sonographical appearance of nerves such as the size of the nerve, the frequency used, and the angle of incidence of the ultrasound beam. The sonographic imaging of the brachial plexus is very feasible in the space between the anterior and middle scalene muscle. Nerves are visualised as multiple round or oval hypoechoic areas encircled by a relative hyperechoic horizon. Ultrasonic guided brachial plexus blocks are not only determined by the visualised positioning of the tip of needle, but rather by monitoring the injection of local anaesthetics as they encircle the roots of the brachial plexus. In the case of an impediment of the needle with corresponding distribution of local anaesthetic, the needle position can be altered through this method until normal distribution is seen.

Results. In several studies (2,3) the use of ultrasound have been shown to be beneficial for success rate, onset time and the reduction of risk of complications.

Conclusion. Ultrasonography is an ideal method to detect peripheral nerve structures. Thus, this mean can be used for region anaesthetic blocks for needle guidance as well as local anaesthetic control resulting in a perfect blockade and a visible reduction of risk factors.

References

EMERGENCY AIRWAY-MANAGEMENT IN ANAESTHESIA AND EMERGENCY MEDICINE
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Maintaining sufficient oxygenation and ventilation is one of the major goals in anaesthesia and emergency medicine. Ten years ago the American Society of Anesthesiologists proposed the 'difficult airway algorithm' in order to reduce the incidence of severe complications during airway management (1). Potentially disastrous 'cannot-intubate-cannot-ventilate' situations can only be prevented by meticulous pre-anaesthetic patient's evaluation (e.g. patient's history, Mallampati- or Wilson-classification) (2). In all patients with apparent signs of difficult airways the airway has to be secured awake (i.e. fiberoptic intubation using sufficient local anaesthesia and light sedation).

If a difficult airway situation is encountered after anaesthesia induction, the first step is to call for help! When mask ventilation is sufficient (i.e. 'cannot-intubate-can-ventilate') alternative methods for tracheal intubation may be chosen (e.g. Fastrach, fiberoptics) and the option of cancelling the procedure has to be kept in mind! 'Cannot-intubate-cannot-ventilate' situations carry a high risk of poor outcome and only four manoeuvres are appropriate to clear the situation: insertion of either laryngeal mask airway (LMA) or esophageal-tracheal Combitube (ETC), transtracheal jet ventilation (TTJV) or the establishment of a surgical airway. Concerning LMA and blind or fiberoptic intubation through the device is possible in emergency situation. Positioning is easier compared with the standard LMA, the intubating LMA (Fastrach) seems to be the better choice for the emergency medicine. To the contrary, studies reporting a trend to an improved outcome have been published within the last years. Several of those studies were either not randomized or were reported by single centres evaluating ARF/ARDS mortality over time using historical controls! Furthermore, good outcomes in randomized controlled trials might also reflect restrictive inclusion criteria enrolling less severely-ill patients (e.g. 88% of patients screened for the NIH network trial (2) were excluded; mortality was higher than those of included patients!).

In a recently published 28-day international study, Esteban et al. (3) investigated 5183 patients requiring mechanical ventilation and reported mortality rates of 31% for ARF and 52% for ARDS. Similar results have been published from 132 Scandinavian ICUs (1231 ARF pts: mortality 41%) (4), French (ARF mortality 31%, ARDS mortality 60%) and Italian ICUs (ARDS mortality 49%) (5). In conclusion, there might be a slight trend to the better, but mortality rates for ARF (30-40%) and ARDS (~50%) patients still remain unacceptably high! Too strict patient selection excluding patients with additional organ failure, elderly patients or patients with severe underlying disease might result in a too optimistic view of ARF/ARDS mortality.

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NOSOCOMIAL INFECTIONS ON ICU: EPIDEMIOLOGY, PREVENTION AND THE IMPORTANCE OF ANTIBIOTIC RESISTANT BACTERIA
A. Kramer, M. Wendt

1. Quality of structure and process determine the quality of results
The incidence of nosocomial infections (NI) varies between 7% and 30% on intensive care units (ICU). That is why the determination of the infection rate is not sufficient for the assessment of the hygiene standard. On the same ICU, however, surveillance of NI may be useful to see...
changes of the rate, e.g. as an effect of interventions. Incidence rates are considered to be more valid in comparison to prevalence rates. Example will be presented. The main emphasis in prevention should focus on hand hygiene, invasive procedures, antisepsis, wound care based on the stage of the wound, aseptic change of dressing, reprocessing of instruments and beds, identification of undetected sources for potentially pathogenic microorganisms and strategies for chemotherapy. Monitoring the compliance will help to establish this standard. Common mistakes will be demonstrated based on the EURIDIKI study.

2. The ubiquitous presence of pathogenic microorganisms requires a multi-barrier concept to prevent transmission

Prevention of cross infections is crucial. Antimicrobial measures and ‘non-touch’ techniques must be complementary. The immediate environment of the patient is the most critical one. Based on our own study on the contamination on ICU we present the concept that has been implemented on ICU to minimize transmission of microorganisms.

3. The increasing spread of antibiotic-resistant bacteria (ARB) requires a microbiological monitoring and a valid outbreak management

Effective isolation and sanitization or therapy depending on the type of microorganism are necessary if a patient is infected or colonized with ARB. Surveillance of staff may be inevitable which may lead to their sanitization or therapy. Data will be shown regarding MRSA colonization.

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IL12

ACTIVE RESOURCE MANAGEMENT IN THE INTENSIVE CARE UNIT

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Intensive Care Medicine and it’s cost development remains of great interest for the medical community and the public. Patients receiving medical care in ICUs account for nearly 30% of acute care hospital costs, yet these patients occupy no more than 10% of inpatients beds (1). With the aging of the population, greater demand for critical care services will occur. At the same time cost development and the increasing number of preventable adverse events in elderly patients focus attention to provide more effective and efficient care to the ICU patients. As a result of the social and economic pressures, there is a need to provide more data about the type and quality of clinical care delivered in the ICU.

The RIYADH-ICU program is used since 1996 to control the working process and it’s efficiency in the ICU (31 beds, 3500 pts./year, 9000 treatment days/year) at the Central Hospital Links der Weser, Bremen. Between January 1, 1997 and December 31, 2001 16,615 patients were admitted to the ICU. Between 01/97 and 12/00 55.0% of all pts. were older than 65 years but 60.7% between 01-12/01. Preexisting chronic diseases at the end of 2001 were Diabetes, Hypertension, Renal Insufficiency, and Obesity. In the ICU patient population increased the incidence of multiple organ failure (>2 organs) from 14.3% (486 pts. in 1997) to 20.9% (687 pts. in 2001). The mean ICU mortality decreased from 7.5% in 1997 to 4.6% in 2001 and the Hospital mortality decreased from 9.2% to 6.7%. On the other hand the total number of TISS points increased from 330.205 (1998) to 366,777 (2001) and the total costs rose from Mill. €8,43 to Mill. €9.83 for the same period. Effective cost per survivor (ECPS) in patients ventilated artificially for more than 7 days decreased from €67,082 (161 pts. in 4 years i.e. 40.3 pts. as a mean per year) between 01/97 and 12/01 to €57,236 (51 pts. in 2001).

But the number of pts. with acute renal failure (mainly following a growing number of prolonged episodes of hypotension) rose in the last 3 years from 165 (1999) and 242 (2000) to 264 (2001). Because the increase in the mortality rate (53.4% in 2000 to 40.7% in 2001) the ECPS fell from €41,661.99 (2000) to €18,533.06 (2001). We conclude that intensive control of efficiency and adversed event control is a must in every high demanding professional ICU environment. But the increasing workload increases corresponding costs.

Reference


IL13

THE CRITICAL HAEOMATOCRIT – AN ENDLESS JOURNEY?

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The quest for a universally applicable 'Critical Hematocrit' is based upon three major assumptions that have essentially never been challenged until recently:

1. Anemia is associated with a high risk. 2. This risk may be altered by increasing hematocrit (hct) and 3. there is one uniform hct value that indicates the threshold for critical oxygen transport capacity for all patients in all situations. These hypotheses shall be discussed critically.

2. Anemia has been found to be associated with increased risk for mortality and morbidity, both in large epidemiological studies in the general population, and in the peri-operative setting and in the critically ill patient (1). This risk is inherent to anemia by virtue of low levels of oxygen carriers potentially resulting in tissue hypoxia, but it is also precipitated by the underlying disease for which anemia is often a symptom. Specific hct values for subgroups of patients with different extent of comorbidity, especially cardiovascular, are difficult to establish.

Reference