CRITICAL ROUNDS

MICRO LABS LIMITED

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Dear Doctor,

Greetings from Micro Labs limited. We are happy to bring "CRITICAL ROUNDS" containing latest information in the field of Critical care medicine.

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Should you require any specific article or medical information, please feel free to contact us at medicalservices@microlabs.in

Looking forward to your valuable feedback

Best Regards,
Medical Team, Micro Labs Ltd

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Death in hospital following ICU discharge: Insights from the LUNG SAFE study

Introduction

Patients that are discharged alive from the ICU are often considered to have 'survived' their critical illness, and to be within the recovery phase. However, this is often now understood that these patients suffer ongoing increased morbidity and mortality following the acute phase of their critical illness. Indeed, one might view ICU survival as one—albeit major—of a series of hurdles during a recovery process from critical illness which will take several years. Elegant long-term follow-up studies, like those conducted by Herridge and colleagues, show substantial ongoing functional limitations that persist up to five years following ARDS. In contrast, relatively little is understood about the subgroup of patients that are discharged to the ward from the ICU, but subsequently die in hospital before discharge. Of particular interest is that the identification of probably modifiable factors related to in-hospital death in these patients. Patients discharged from ICU can be considered to fall into 2 groups, depending on whether limitations regarding life-sustaining treatments (referred to as 'treatment limitations') were placed at the time of discharge. Patients in whom treatment limitations were in situ are generally considered to possess a more guarded prognosis, while patients without such treatment limitations are thought to possess a far better prognosis.

Objectives:

To determine the percentage of patients dying in hospital following ICU discharge, in patients with and without treatment limitation decisions in place.

Description of factors associated with death in both patient subgroups, with a particular focus on identifying risk factors (some of which are potentially modifiable) and related to patient management.

Methods: The Large observational study to UNderstand the Global impact of Severe Acute respiratory FailurE study was an international, multicenter, prospective cohort study of patients with severe respiratory failure, conducted across 459 ICUs from 50 countries globally. This study aimed to understand the frequency and factors associated with death in hospital in patients who survived their ICU stay. In this study outcomes in the subpopulation discharged with no limitations of life sustaining treatments ('treatment limitations'), and the subpopulations with treatment limitations were examined.

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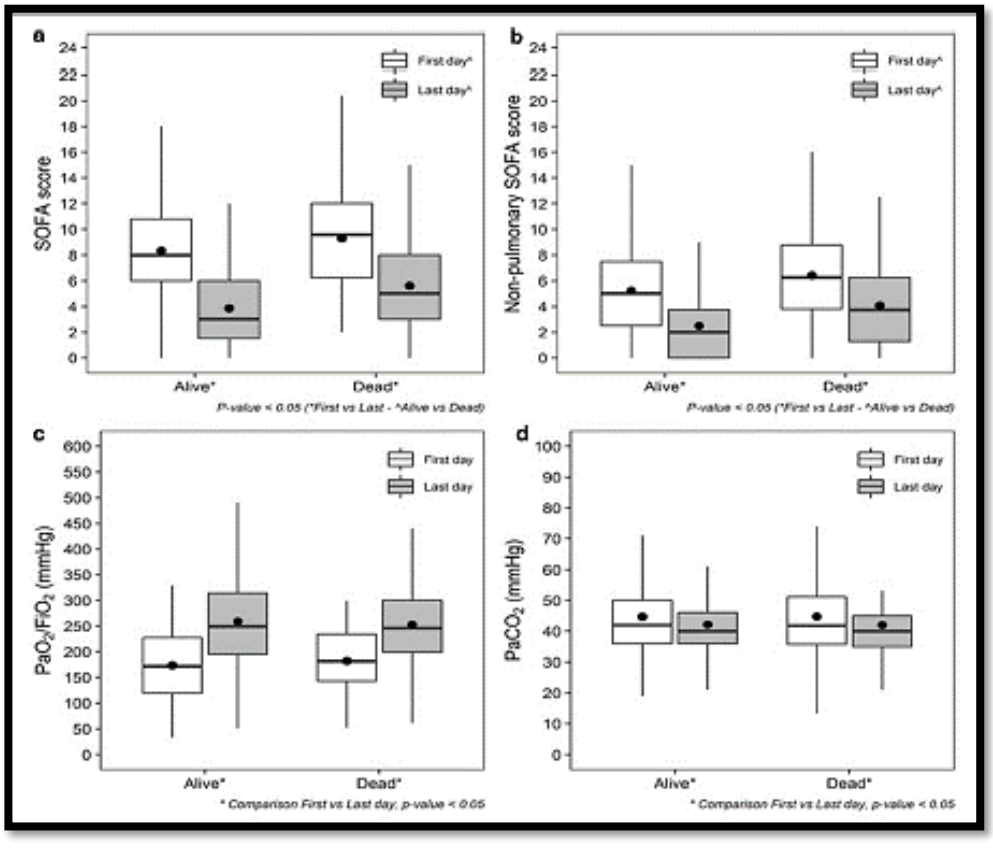
Results: 2186 (94%) patients with no treatment limitations discharged from ICU survived, while 142 (6%) died in hospital. 118 (61%) of patients with treatment limitations survived while 77 (39%) patients died in hospital. Patients without treatment limitations that died in hospital after ICU discharge were older, more likely to have COPD, immunocompromised or chronic renal failure, less likely to have trauma as a risk factor for ARDS. Patients that died post ICU discharge were less likely to receive neuromuscular blockade, or to receive any adjunctive measure, and had a higher pre- ICU discharge non-pulmonary SOFA score. A similar pattern was seen in patients with treatment limitations that died in hospital following ICU discharge.

Patients with no treatment limitations who die in hospital following ICU discharge have higher overall SOFA scores (a), which appeared to be due to higher systemic organ injury severity scores (b) as pulmonary organ injury severity scores (c, d) were similar, compared to survivors, at both ICU admission and at ICU discharge



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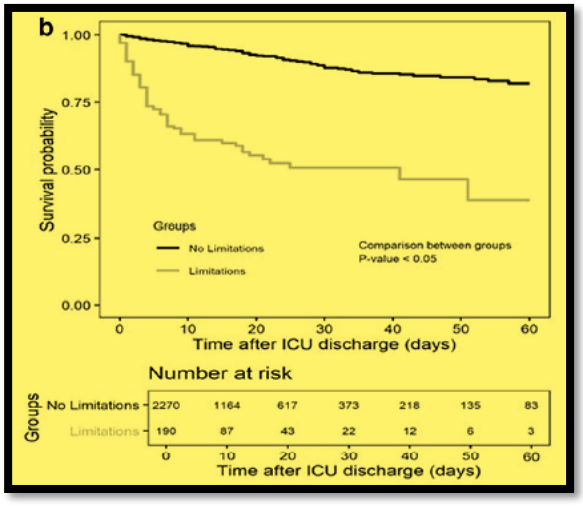
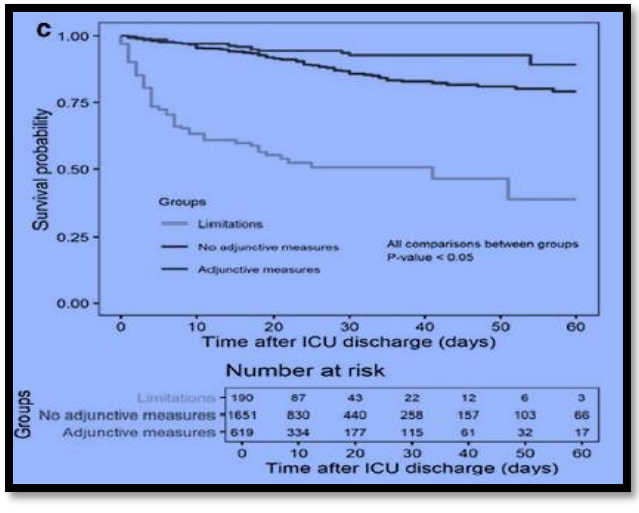
Outcomes of patients that survive to hospital discharge



Hospital survival rates post ICU discharge were significantly lower in patients, That had treatment limitations, compared to those with no limitations



Patients with no limitations, survival was significantly higher in those That received adjunctive therapies

Conclusions:

This is the first study to examine the factors associated with mortality post ICU discharge in patients with ARDS. Encouragingly, survival rates to hospital discharge following ICU discharge are high, with survival rates in patients with limitations of life sustaining therapy higher than expected. An important finding was that even though these patients were critically ill due to ARDS, it was the non-pulmonary components of their organ dysfunction that was associated with risk of death in hospital following ICU discharge.

Source: Madotto F, McNicholas B, Rezoagli E, Pham T, Laffey JG, Bellani G; LUNG SAFE Investigators; ESICM Trials Group. Death in hospital following ICU discharge: insights from the LUNG SAFE study. Crit Care. 2021 Apr 13;25(1):144.

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Vascular access for renal replacement therapy among 459 critically ill patients: a pragmatic analysis of the randomized AKIKI trial

Introduction

Vascular access site for acute renal replacement therapy (RRT) is a routine clinical question for intensivists and nephrologists taking care of patients with severe acute kidney injury (AKI). Placement of temporary catheter at the subclavian site is not recommended because of the risk of vascular thrombosis or stenosis of the subclavian vein, which could hamper potential creation of arteriovenous fistula in these patients at risk of end-stage renal failure. Randomized trials comparing jugular and femoral sites have shown similar rate of nosocomial events and catheter dysfunction. Recent guidelines recommend equally both sites (femoral and jugular). Since the publication of RCT and guidelines, there is a scarce of prospective observational data on the habits of intensivists concerning RRT catheter. The AKIKI trial database provides several interesting prospective data regarding RRT catheters in ICUs.

Aim:

To investigate RRT catheter site, duration of use, reason for catheter replacement, and complications, in particular infectious according to insertion site, in a large population of critically ill patients.

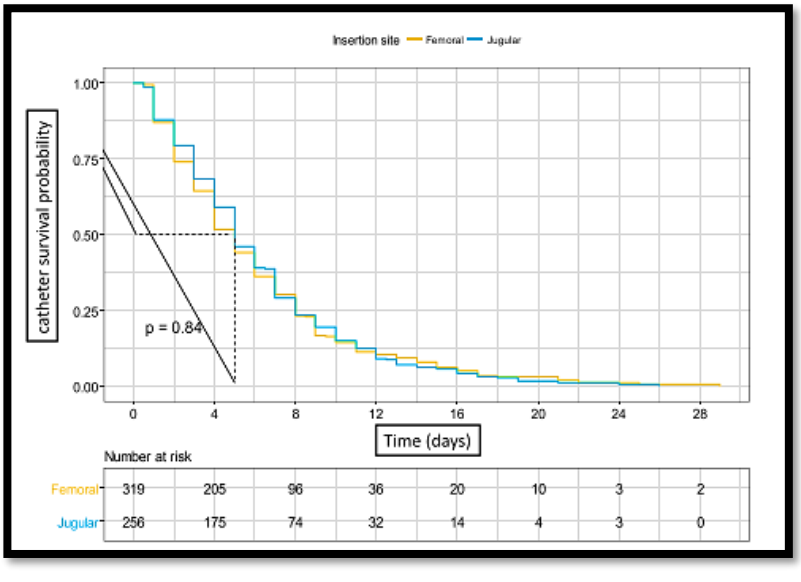
Patients and methods:

An ancillary study performed of AKIKI study, a pragmatic randomized controlled trial, in which patients with severe acute kidney injury (KDIGO 3 classifcation) with invasive mechanical ventilation, catecholamine infusion or both were randomly assigned to either an early or a delayed RRT initiation strategy. Study involved all patients who underwent at least one RRT session. Number of RRT catheters, insertion sites, factors potentially associated with the choice of insertion site, duration of catheter use, reason for catheter replacement, and complications were prospectively collected.

Results:

Among the 619 patients included in AKIKI, 462 received RRT and 459 were fnally included, with 598 RRT catheters. Femoral site was chosen preferentially (n=319, 53%), followed by jugular (n=256, 43%) and subclavian (n=23, 4%). In multivariate analysis, continuous RRT modality was significantly associated with femoral site (OR=2.33 (95% CI (1.34–4.07), p=0.003) and higher weight with jugular site [88.9 vs 83.2 kg, OR=0.99 (95% CI 0.98–1.00), p=0.03].

Duration of catheter use. Legend: Median duration of use was 5 days for both femoral (IQR 2–8), and jugular (IQR 3–8) catheters (p=0.84)



Investigator site was also significantly associated with the choice of insertion site (p=0.03). Cumulative incidence of catheter replacement did not differ between jugular and femoral site [sHR 0.90 (95% CI 0.64—1.25), p=0.67]. Catheter dysfunction was the main reason for replacement (n=47), followed by suspected infection (n=29) which was actually seldom proven (n=4). No mechanical complication (pneumothorax or hemothorax) occurred.

Conclusion:

Femoral site was preferentially used in this study of RRT catheters in intensive care units. The choice of insertion site depended on investigating center habits, weight, RRT modality. A high incidence of catheter infection suspicion led to undue replacement.

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Source: Benichou N, et al. Vascular access for renal replacement therapy among 459 critically ill patients: a pragmatic analysis of the randomized AKIKI trial. Ann Intensive Care. 2021 Apr 8;11(1):56.

Adverse events associated with administration of vasopressor medications through a peripheral intravenous catheter: a systematic review and meta-analysis

Introduction

Intravenous vasopressors are commonly used to augment systemic blood pressure. Current practice, within intensive care units (ICUs), is to administer through a central venous catheter (CVC). The reason for preferential use of CVCs rather than the more ubiquitous peripheral intravenous (PIV) catheters is due to the long-standing concern regarding vasopressor extravasation outside the PIV and potential for tissue damage. However, insertion and maintenance of a CVC is not without risk. CVC insertion can be time consuming and is associated with patient discomfort. For many patients, CVC insertion is a necessary intervention. Local tissue injury tended to occur in patients who had vasopressors infused for longer durations of time (≥ 24 h) through a PIV distal to the popliteal or antecubital fossa. Larger cohort studies examining adverse events associated with PIV vasopressor administration in adults have been published as well as multiple recent studies in the child population.

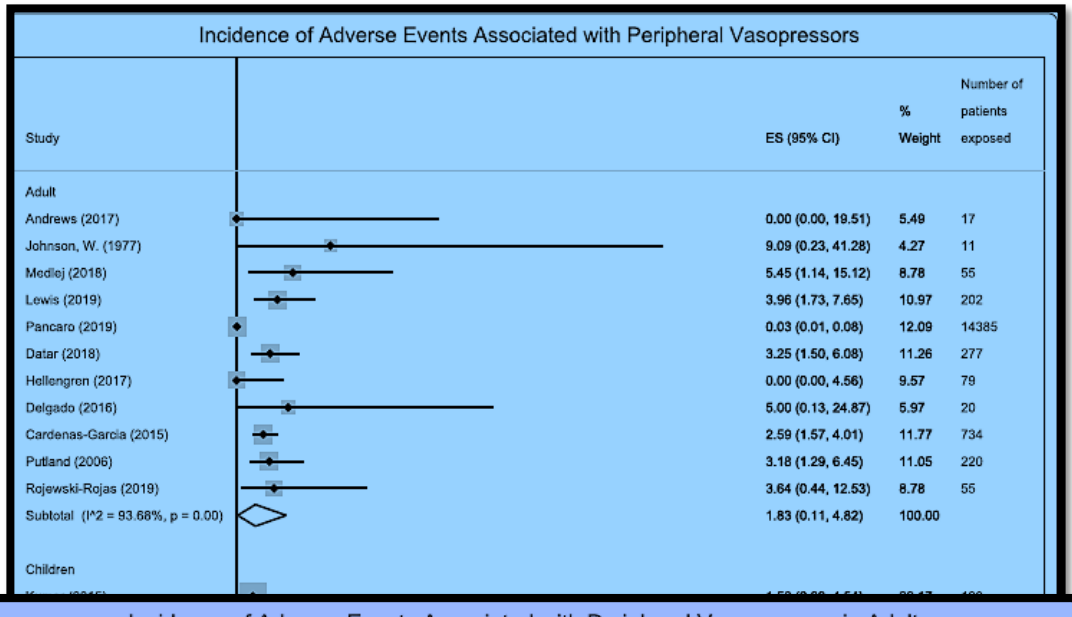
Methods:

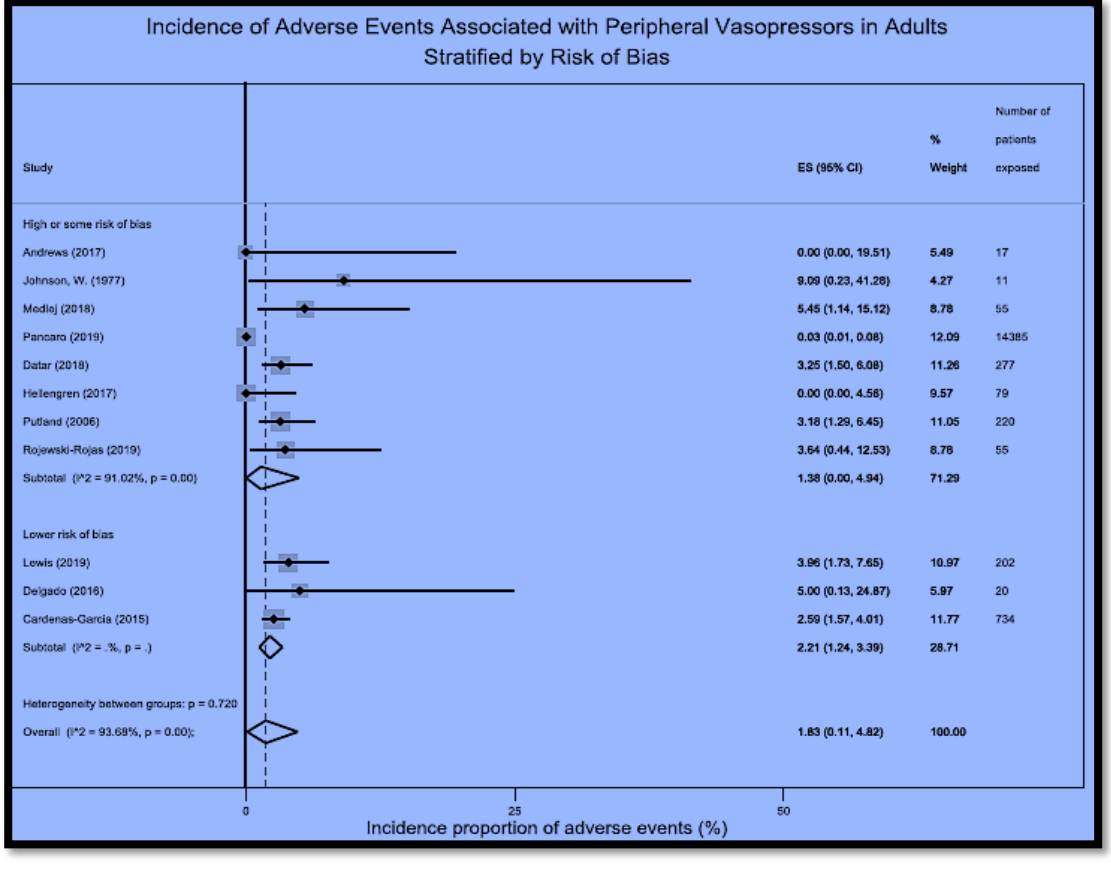
Systematic review and meta-analysis methodology is used to examine the incidence of adverse events associated with vasopressor administration through PIVs in patients of any age cared for in any acute care setting. Studies were included if they were: (1) cohort, quasi-experimental, or randomized controlled trial study design; (2) conducted in humans of any age or clinical setting; and (3) reported on local anatomic adverse events associated with PIV vasopressor administration. Risk of bias was assessed using the Revised Cochrane risk-of-bias tool for randomized trials or the

Results:

Twenty-three studies were included in the systematic review, of which 16 and 7 described adults and children, respectively. Meta-analysis from 11 adult studies including 16,055 patients demonstrated a pooled incidence

proportion of adverse events associated with PIV vasopressor administration as 1.8% (95% CI 0.1–4.8%, *I*2 = 93.7%). In children, meta-analysis from four studies and 388 patients demonstrated a pooled incidence proportion of adverse events as 3.3% (95% CI 0.0–10.1%, *I*2 = 82.4%).





Subgroup analyses did not detect any statistically significant effects associated with stratification based on differences in clinical location, risk of bias or design between studies, PIV location and size, or vasopressor type or duration. Most studies had high or some concern for risk of bias.

Conclusion:

The incidence of adverse events associated with PIV vasopressor administration is low. Additional research is required to examine the effects of PIV location and size, vasopressor type and dose, and patient characteristics on the safety of PIV vasopressor administration.

Source: Owen, et al. Adverse events associated with administration of vasopressor medications through a peripheral intravenous catheter: a systematic review and meta-analysis. Crit Care (2021);25:146