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REFERENCES


Response

To the Editor:

We thank Dr Hellyer and colleagues for their comments regarding our article on prophylactic use of a single dose of antibiotic administered at the time of intubation in comatose patients. We agree that the excess of antibiotic use is associated with a higher risk of acquisition of multiple drug-resistant pathogens. Therefore, in our article, the goal of a prophylactic strategy is focused on a very particular population of comatose patients who are intubated in emergency situations. This group of patients presents a high incidence of early ventilator-associated pneumonia (VAP) (50%-60%).

1. American Thoracic Society; Infectious Diseases Society of America recommendations, it is suggested that prophylactic antibiotic use might be administered within the first 24 h. In our study, to rapidly decrease the bacterial burden during intubation, we decided to focus the period of administration of antibiotic within the first 4 h after intubation.

The association of developing resistances to antibiotics has been recognized with the use of prolonged treatments. Furthermore, significant differences in antibiotic resistances have been documented when surgical patients received antibiotic prophylaxis for >48 h. Interestingly, this was the main difference with previous studies that administered more than one single dose of antibiotic.

We have to acknowledge that with the use of our strategy, the outcome was not different between patients who received prophylaxis and those who did not. However, it is important to highlight the reduction in antibiotic pressure. Dead bugs do not mutate, and, therefore, avoiding early-onset VAP episodes will help avoid prescribing antibiotic therapy with ceftriaxone, quinolone, ampicillin/sulbactam, or ertapenem for 5 to 7 days based on the current American Thoracic Society/Infectious Diseases Society of America guidelines recommendation.

We agree that we should be restrictive with the use of broad-spectrum antibiotics in ICU settings to reduce the acquisition of multiple drug-resistant pathogens. Therefore, we strongly believe that with the use of a single antibiotic dose, the incidence of early VAP decreased and consequently the antibiotic consumption in the ICU decreased (from 60% in control subjects to 30% in the prophylaxis group). Rational antibiotic prescription is conceived to optimize antimicrobial therapy, to assure cost-effective therapy while containing bacterial resistance. Although our strategy needs to be further evaluated in a randomized clinical trial, antibiotic stewardship can be easily implemented with a single dose.

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REFERENCES


Thoracic Ultrasound Guidance for Access to Pleural, Peritoneal, and Pericardial Space

To the Editor:

A great contribution to patients’ care and safety of procedures is provided by ultrasound guidance in several interventions. Better visualization of the needle insertion site for thoracentesis, pericardiocentesis, and paracentesis is possible with ultrasound, reducing the risk of complications and their associated costs. This subject is very well presented in the recent report in CHEST (February 2013) by Mercaldi and Lanes, which demonstrates that ultrasound guidance is associated with decreased risk of pneumothorax with thoracentesis and of bleeding complications with paracentesis, allowing a measurable lowering in hospitalization costs. Their contribution is particularly valuable since, seemingly, echo guidance is not sufficiently in use worldwide.
The methodology used in their study is based on International Classification of Diseases, Ninth Revision diagnosis codes, linking them with outcomes of interest: in the thoracentesis cohort, pneumothorax and/or in the paracentesis cohort, bleeding complications (hemorrhage, hematoma, or hemoperitoneum). Briefly, the risk of pneumothorax was 3.09% in the group not receiving ultrasound guidance and 2.26% in the ultrasound group; for patients having paracentesis procedures, the risk of bleeding complications was 0.27% with ultrasound guidance and 1.25% without ultrasound. Nonetheless, the occurrence of these types of complications is exceedingly high in comparison with our personal experience. This can be due to the actual procedures and the devices used. Transducers with the parallel needle can guide only obliquely, angulated vs the ultrasound beam, causing, even with a lower frequency, the same complications of the blind punctures. The advantages of ultrasound-guided transthoracic thoracentesis, pericardiocentesis and abdominal paracentesis are related to the use of probes that have a central hole through which the needle set is introduced (Fig 1). By this device, which is the most suitable and reliable for these purposes and is available for most equipment, we can follow the needle at all times in its road, with an image exactly on the line of the target and the transducer, linear array, or convex.

The individuation of the intercostal road is not approximate: The vision of the lung is immediately below the tip of the needle, allowing for the possibility of timely and quick withdrawal and avoidance of unwanted blood vessel puncture. This is the outcome we have experienced: that is, two pneumothoraces, no intrapleural hemorrhage after ultrasound-guided thoracentesis (876 procedures in 2012), and no bleeding secondary to ultrasound-guided paracentesis (687 in 2012), usually performed with 18-gauge to 20-gauge needles. Paracentesis, thoracentesis, and pericardiocentesis under ultrasound guidance also assist in avoiding puncture of intestines (peritonitis) and myocardium (infarction, arrhythmias), complications not considered by Mercaldi and Lanes.1

FIGURE 1. A, Convex and linear array probes with thoracentesis/fine-needle aspiration (FNA) set allowing a perpendicular access and vision (central hole in the transducer). B, Pleural effusion. The needle is visible at the right of the dotted line.

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REFERENCES


Response

To the Editor:

I am grateful for the important contribution made by Dr Trovato and colleagues to the interpretation of our article1 regarding the benefits of ultrasound guidance. We used detailed automated health insurance records to assemble large populations of patients undergoing thoracentesis and paracentesis. Most procedures were not accompanied by ultrasound guidance, although ultrasound guidance was associated with reduced risks of pneumothorax and bleeding complications. Health insurance claims facilitate large populations and enhance precision of effect estimates, but often do not provide a complete clinical picture of all relevant factors. Dr Trovato and colleagues alert us to improved visualization offered by current clinical practice. We did not have access to certain details regarding transducer type, nor could we evaluate sonographic technique, training, and other aspects of the procedures. We appreciate the potential importance that these factors might have in further improving patient safety.

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