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Essay

Ultrasound for anesthesiologists☆

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ABSTRACT

Over the entire world, point of care ultrasonography has gained evidence and acceptance between clinicians of multiple specialties. Even when it has multiple uses, there are a lot of barriers for its implementation. With this document, I pretend to incentivate its disseminated use among colombian anesthesiologists.

Ecografía para anestesiólogos

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RESUMEN

En el mundo entero, la ecografía hecha por el clínico (o "point-of-care ultrasonography") es una herramienta que gana más evidencia y aceptación. Aunque sus usos son múltiples, existen muchas barreras para su implementación. A través de esta reflexión se pretende incentivar el uso de la ecografía hecha por el clínico entre los anestesiólogos colombianos.

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Introduction

Point of care ultrasonography is the use of an ultrasound machine by the treating physician in order to obtain a quick answer to the questions that come up during the physical examination, instead of waiting for the results of a scan performed and interpreted at a later date by a practitioner who is not directly involved with managing the patient. It also improves the safety of the procedures, and enables repeat assessment in order to evaluate the effectiveness of the interventions.[1,2] It is targeted to the organ or system believed by the physician to be involved, while scans performed by imaging specialists tend to be more extensive and systematic.[1,2] Ultrasound has become more widely used by clinicians in recent years because devices are less expensive, more portable and have better resolution. Although that is still not the situation in our setting, there are a growing number of courses and rotations, and plenty of training resources on line.[3]

Some see in ultrasound an extension of the physical exam, while there are others that argue that ultrasound is the stethoscope of the 21st Century.[1,3] However, when they are compared, for most diseases ultrasound is more sensitive and specific than the stethoscope, and even easier to learn.[2–4] In this regard, the literature suggests that, except for cardiologists, most clinicians have very poor skills at heart auscultation.[5,6]

Given all these considerations, and in view of the avalanche of publications on ultrasound use by clinicians, anesthesiologists included, a manual search was conducted in the issues of the last five years in the *Colombian Journal of Anesthesiology* of the words “echography”, “ultrasound” and “ultrasonography”. The search resulted in a total of seven articles, most of them case reports, but only in three of them was ultrasound used by the anesthesiologist.[7–9] This reflection was prepared with the goal of promoting a greater use of ultrasound.

Why anesthesiologists are not competitors for other specialists

For specialties that use it as a diagnostic tool, ultrasound is a static tool. Clinicians tend to use point-of-care ultrasound as a dynamic tool that provides them with an initial image to support the diagnosis suggested by the clinical findings, followed by other images to monitor response to treatment.[1,2] In this way, it becomes a tool for physiologic monitoring, something with which anesthesiologists work every day.

In this context, it is not very probable to find radiologists and/or cardiologists ready to go to the operating rooms or the intensive care units after hours and to be present throughout the treatment of the patient.[1,2] For example, when a septic patient is admitted in the early hours of the morning and the decision is made to proceed to ultrasound-guided resuscitation, probably none of them will be willing to attend immediately and remain by the bedside during the initial hours of resuscitation until there is certainty that physiological goals have been achieved.

Clinicians who us ultrasound also do it for very specific interventions in their areas. If an anesthesiologist is trained to do regional anesthesia or interventional pain procedures, the use of ultrasound guidance adds safety but in no way does it place the clinician in competition with an imaging specialist who may not even be familiar with the procedure.[1,2,10]

On the other hand, most anesthesiologists are not interested in leaving their usual areas of influenceoperating rooms,recovery rooms,intensive care units and interrupt care of acutely ill patients in order to perform lengthy elective ultrasound scans in stable patients.[1,2] Although it is true that ultrasound skills learnt in one area may be applied in others, in practice, the focused training received by a clinical specialist is not enough to perform these types of scans that require a steeper learning curve.[2]

Can we learn to use ultrasound correctly?

Historically, the primary application for perioperative ultrasound in anesthesia was transesophageal echocardiography; however, it is performed by cardiovascular anesthesiologists, who, as subspecialists, require skills similar to those of cardiologists and radiologists. Some authors are of the view that, paradoxically, this very specialized application aimed at reducing the risks of invasive procedures meant that ultrasound remained out of the realm of general anesthesia for a very long time. Even in such a specialized application, there is evidence showing that cardiovascular anesthesiologists have good diagnostic skills.[2,11]

However, ultrasound applications within the access of the anesthesiologists are simpler than transesophageal echocardiography. Simplified protocols are advocated for ultrasound use in acute care settings; these are focused on finding answers to simple questions that the clinician seeks during patient treatment. For example, in transthoracic echocardiography, the American Society of Echocardiography (ASE) requires, in its consensus on basic views, the use of 20 different views in order for an examination to be considered complete. However, one of the protocols used for critically-ill patients, the FATE protocol (Focused Assessment in Transthoracic Echocardiography), requires only four views that are much easier to learn and can be used by the clinician to find answers on specific questions.[12]

Echocardiograhic applications for acutely ill patients are based primarily on pattern recognition. The idea of the protocols is to perform short scans, focusing on abnormal ultrasound patterns that provide information on severe life-threatening conditions. The idea is not by any means to perform quantitative ultrasound. Short learning curves have been shown with these simplified protocols and with the help of short training courses (mainly workshops with healthy patients), with adequate retention of the acquired skills. Some simulators have also been used successfully.[1,2]

There are two different schools of thought on how pervasive ultrasound should be. There are those who believe that any anesthesiologist should be able to receive training in this area, while there are others who believe that training should be restricted only to highly specialized practitioners. Some articles refer to an expertise pyramid where the base consists