With regional anesthesia making resurgence (mainly due to increasing use of ultrasound), it is important to adapt a technique that is safe, effective, and easy to perform. This issue contains a study that compares analgesic efficacy of intrapleural and paravertebral blocks.[11] Although, the authors conclude that both techniques have equi-analgesic potential, practical utility of one method over another should be appreciated.

Intrapleural analgesia using local anesthetic was first described in 1984[2] for abdominal surgeries. Despite its simplicity, the technique never gained popularity. However, for a procedure that in itself has no therapeutic value (patients do not present to an anesthesiologist for a nerve block except in pain clinics), a 2% incidence of pneumothorax[3] would be perceived as too high. Actual incidence of clinically non-significant pneumothorax may be even higher. Once the parietal pleura is breached with a “Touhy needle”, disconnecting the identifying air syringe to connect local anesthetic syringe can lead to significant amount of air sucked into the pleural space.[4] This, not only can cause lung collapse; but also lead to formation of air pockets in the pleural space, thereby preventing the uniform spread of local anesthetic (leading to patchy block). Rarely, needle induced lung parenchymal injury can cause tension pneumothorax. Once the local anesthetic is injected, it is exposed to a large surface area of pleural space leading to significant systemic absorption.[5] Patients with emphysema and chronic obstructive pulmonary disease (COPD) have hyperinflated lungs with air filled bullae, injury to which may be difficult to predict and prevent. Phrenic nerve paralysis is also a known complication that may become significant in patients using accessory muscles for breathing or in patients with poor lung conditions.[6] With these risks in mind, it is pertinent to institute these blocks in specific group of patients wherein the benefit outweigh the risks. Most of practicing anesthesiologists would agree, that patients with lung related pathologies like COPD, asthma, pneumonia, or some pleural diseases where general anesthesia is best avoided would perhaps benefit more than others.[7,8] Unfortunately, these are the same patients who will tolerate the above said complications poorly. Bulla rupture or a small degree of pneumothorax or needle induced bronchospasm can lead to sudden deterioration in patients with reactive airways leading to postponement of the surgery (or intensive care unit admission).

Paravertebral space is in continuity with pleural space, however, anatomically it is separated from pleural space by ribs and costophrenic ligament; thus performing a regional anesthetic technique is far safer. Evidence exists to support its use as sole anesthetic (in place of general anesthesia) for breast surgery, thus validating its utility in patient subgroup where intrapleural block is unsafe.[9] Surgical anesthesia is attainable and block density is comparable to central neuraxial blockade, simultaneously avoiding hypotension, urinary retention, nausea and vomiting, and risk of spinal cord injury. Limited literature is available comparing both the techniques as analgesic methods in addition to general anesthesia. Shams and coworkers compared analgesic efficacy of thoracic paravertebral to intrapleural analgesia for modified radical mastectomy for carcinoma breast. Paravertebral block was found to have significant analgesic advantage as patients had lower verbal rating score, less additional analgesic requirements, and longer duration of analgesia.[10] The utility of these techniques for high-risk patients undergoing thoracotomies needs more clinical investigations.

A single injection (3-5 ml per segment of local anesthetic) causes adequate somatic (mean of five dermatomes) and sympathetic blockade (mean of eight dermatomes). It not only lowers the total volume of local anesthetic required, the surface area for systemic absorption is also less, thus possibility of systemic toxicity is decreased.[11] As an alternative to single injection (repeated as required), a catheter can be inserted to provide continuous postoperative analgesia. Unlike a catheter inserted into the pleural space, a paravertebral catheter is less likely to suffer migration/displacement as pleural space is much larger and allows free catheter movement.

However, paravertebral block also suffers the limitation of inadequate analgesia that can be explained by the inadequate spread of the drug which has been confirmed by radiographic dye spread. For longitudinal spread (and multisegmental block) it is important to inject the local anesthetic after puncturing endothoracic fascia. Endothoracic fascia divides the paravertebral space into two compartments: Posterior subendothoracic (cloud like spread unpredictable/inadequate block) and an anterior

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subserous (extrapleural) compartment (longitudinal spread; multiple segments blocked)[12] [Figure 1]. Blind techniques suffer the limitation of not being able to predict the block pattern but this limitation can easily be dealt with by the aid of ultrasound or fluoroscopy. If drug/dye spread seems to be limited, simply advancing the needle (few mm) past the endothoracic fascia can overcome this limitation.

The side effects associated with a paravertebral block are rare and include a 6.1-10.7% incidence of block failure. Inadvertent vascular puncture (6.8%), hypotension (4%), epidural or intrathecal spread (1%), pleural puncture (0.8%), and pneumothorax (0.5%) are some other complications.[13] It must be kept in mind that these incidences are from previous studies where conventionally paravertebral block was performed using loss of resistance technique. Accuracy of the block can be improved using nerve stimulation and ultrasonography, and thus complication rates in future are bound to be lower.

In conclusion we agree with the authors that analgesic efficacy of intrapleural and paravertebral blocks when used as adjuvants to general anesthesia is equivalent. As the study was done in patients with healthy lungs, caution is required before they are extrapolated to patients with preexisting pulmonary pathology.

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