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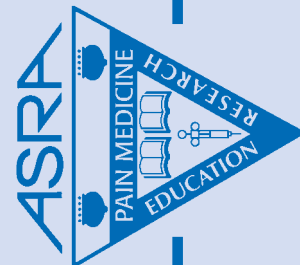
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ASRA News

A PUBLICATION OF THE AMERICAN SOCIETY OF REGIONAL ANESTHESIA AND PAIN MEDICINE

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Lynn M. Broadman, MD
President, ASRA

President's Message

The first thing I would like to do as your newly appointed president is to thank all of you for the support and encouragement I have received during my twenty year association with the American Society of Regional Anesthesia and Pain Medicine (ASRA-PM). I would also like to thank my mentors: the late Harold Carron, Burton Epstein and Raafat Hannallah, who helped guide my research and education so that a position within ASRA-PM was possible.

The second thing I would like to do is brief you on the wonderful Annual Meeting we just held in Vancouver, British Columbia. The Vancouver Convention & Exposition Centre was an outstanding facility. It is located adjacent to the five star Pan Pacific Hotel and just across the street from the Fairmont Waterfront Hotel. Restaurants and shopping were all within walking distance. The harbour walking and bicycle trail allowed one to go for a daily jog, bike ride or rollerblade. All of the gardens and parks were in full bloom with rhododendrons and other native flowers. The exchange rate made it a truly affordable meeting. Finally, Vancouver has an international airport with multiple daily flights to Chicago, Denver, Los Angeles, Seattle and Toronto.

Julia Pollock and her Annual Meeting committee put together a new and diversified educational offering. We had 575 people attend the Annual Meeting and the intensive workshop "Mastering the Brachial Plexus" sold out during both the morning and afternoon sessions. This intensive learning package provided attendees with a review of the literature involving more than a thousand journal articles and two hours of cadaveric anatomy

involving the axilla and neck. The other workshops, masters classes and Problem Based Learning (PBL) sessions were also sold out. There were lectures on acupuncture, herbal medicine, COX-2 NSAIDS, Intradiscal Electrothermal Therapy (IDET), and the efficacy of using fentanyl as an adjunct for regional anesthesia. Please visit www.asra.com for Vancouver meeting highlights. The meeting was so successful and Vancouver was such a lovely venue that plans are afoot to return the Annual Meeting to Vancouver in 2005.

I would like to bring you up to date about two new and exciting educational offerings that will be held in the fall. The 8th Annual Comprehensive Review of Pain Management course will be held at the Hyatt Newporter in Newport Beach, California from 2-5 August 2001. Michael Ferrante, the course director, and a panel of nine internationally recognized experts will conduct this intensive three and one-half day review session. Also, an ASRA Conference on Local Anesthetic Toxicity will be held on 17-18 November 2001 at the Fontainebleu Hilton Resort & Towers in Miami Beach, Florida. The faculty will discuss neuro, myo and cardiac toxicity. Discussions will also center on the current concepts of resuscitation and whether we should continue to use bupivacaine. I know many of you will want to attend this conference.

Finally, It would appear that The Food and Drug Administration (FDA) has concerns about the use of narcotic analgesics for the management of chronic benign pain. The FDA will convene a public advisory committee on 14 and 15 June 2001. The meeting will be at the Holiday Inn, Two Montgomery Village Ave., Gaithersburg, Maryland (a Washington, DC suburb). On both days of the meeting the committee will discuss the medical use of opiate analgesics in various populations, including pediatric patients and patients with chronic pain of nonmalignant etiology, as well as the risk to benefit ratio of extending opiate treatment into these populations. The committee will also address concerns regarding the abuse potential, diversion and increasing incidence of addiction to opiate analgesics, especially to modified release analgesics. The meeting is open to the public. If you would like to make comments in person or in writing, I suggest you get in touch with the contact person, Kimberly Topper, prior to 7 June 2001. You can reach Ms. Tooper by Phone: 301-827-7001, Fax: 301-827-6801 or e-mail <topperk@cder.fda.gov>. Visit the "Items of Interest" section of the ASRA website for more information.

In closing I would like to ask for your help. Neither I nor your Board of Directors can optimally run your society without your input. If you have ideas, suggestions or comments please send them to Society Headquarters <asra@societyhq.com>.

Lynn M. Broadman, MD
ASRA President

Literature Review

Reduction of postoperative mortality and morbidity with epidural or spinal anaesthesia: results from overview of randomized trials.

British Medical Journal Volume 321 16 December 2000 1-12.

Anthony Rodgers, Natalie Walker, S Schug, A McKee, H Kehlet, A van Zundert, D Sage, M Futter, G Saville, T Clark, S MacMahon

Objectives

To obtain reliable estimates of the effects of neuraxial blockade with epidural or spinal anaesthesia on postoperative morbidity and mortality.

Design

Systematic review of all trials with randomization to intraoperative neuraxial blockade.

141 trials including 9559 patients for which data were available before 1 January 1997. Trials were eligible irrespective of their primary aims, concomitant use of general anaesthesia, publication status, or language. Trials were identified by extensive search methods, and substantial amounts of data were obtained or confirmed by correspondence with trialists.

Results

Overall mortality was reduced by about a third in patients allocated to neuraxial blockade (103 deaths/4871 patients versus 144/4688 patients, odds ratio = 0.70, 95% confidence interval 0.54 to 0.90, $p=0.006$). Neuraxial blockade reduced the odds of deep venous thrombosis by 44%, pulmonary embolism by 55%, transfusion requirements by 50%, pneumonia by 39%, and respiratory depression by 59% (all $P<0.001$). There were also reductions in myocardial infarction and renal failure. Although there was limited power to assess subgroup effects, the proportional reductions in mortality did not clearly differ by surgical group, type of blockade (epidural or spinal), or in those trials in which neuraxial blockade was combined with general anaesthesia compared with trials in which neuraxial blockade was used alone.

Conclusions

Neuraxial blockade reduces postoperative mortality and other serious complications. The size of some of these benefits remain uncertain, and further research is required to determine whether these effects are due solely to benefits of neuraxial blockade or partly to avoidance of general anaesthesia. Nevertheless, these findings support more widespread use of neuraxial blockade.

Discussion

There are two types of reviews to be found in the anesthesia literature, narrative and systematic. A narrative review is an overview of a particular topic with recommendations from clinical experts. This study is an example of a systematic review, which is a study that uses scientific strategies to reduce bias in the collection, appraisal and interpretation of relevant studies. Systematic reviews are fairly new in the anesthesia literature, and can be used to summarize existing information, provide estimates of the effects of established interventions or provide supporting evidence for practice guidelines. Systematic reviews are generally described as systematic reviews, systematic overviews, quantitative reviews or meta-analysis.

When evaluating a systematic review it is important that the authors report the following information: the search method should be comprehensive and well-described, the criteria for deciding which studies will be included should be discussed, selection bias should be avoided, criteria for assessing the validity of the included studies should be reported as should the method for combining the studies, the findings of the combined studies should be relevant to the proposed question (in this case—does regional anesthesia decrease operative mortality and morbidity) and finally the conclusions should be supported by the data.

The methods in this review are well described and thorough. 141 studies in which patients were randomized to intraoperative neuraxial block (both spinals and epidurals, with or without general anesthesia) were identified through four different databases. Two unblinded reviewers independently recorded the published findings from each study. A third reviewer then reviewed the analysis. Statistical analysis was odds ratios, 95% confidence intervals, and two sided P values for each outcome using Peto's modification of Mantel-Haenszel method.

Previous randomized clinical trials focusing on fatal or life-threatening events associated with regional or general anesthesia have been too small to detect effects of significant size reliably. Thus the findings of this study are fascinating. The authors conclude that overall mortality was reduced by a third in patients randomized to neuraxial block ($p=0.0006$). Neuraxial blockade reduced the odds of DVT by 44%, PE by 55%, transfusion requirements by 50%, pneumonia by 39% and respiratory depression by 59% ($p<0.001$ for all). These findings seem to substantiate the author's conclusions that encourage a more widespread use of neuraxial blockade.

Julia E. Pollock, MD



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Paresthesia or No Paresthesia?



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Regional blockade at the plexus and peripheral nerve levels provides effective and reliable anesthesia and analgesia for upper and lower extremity procedures. However, success is highly dependent upon the precise localization of neural structures. Historically, this was accomplished through the elicitation of one or more paresthesias (1-4). The exclamation, "No paresthesia, no anesthesia" became the mantra of many (though not all) of our founding fathers. Although alternative methods of neural blockade such as the perivascular, nerve stimulator, and sheath approaches have been described, these techniques often fail to achieve the same success rate. This is especially true when bupivacaine, rather than lidocaine or mepivacaine is utilized (5,6). Horlocker et al (5) investigated the safety and success rates of several regional techniques in patients undergoing repeated axillary blockade. Success rates were significantly higher with the paresthesia technique (90%) compared to the nerve stimulator technique (83%; $P=0.03$) or transarterial injection (81%; $P=0.008$). Similarly, Schroeder and colleagues (6) reported that paresthesia techniques during axillary blockade result in significantly higher success rates compared to transarterial approaches (95% vs. 81%; $P=0.036$). Although elicitation of a paresthesia increased the success rate in these two studies, it did not increase the incidence of neurologic complications. In

other words, improved outcome without increased risk.

Clinicians in opposition to paresthesia techniques often cite an increased risk of neurologic complications postoperatively. Although the intentional elicitation of a paresthesia *may* represent direct needle trauma and theoretically increase the risk of neurologic injury, there are no prospective, randomized clinical studies that are able to definitively support this hypothesis. In fact, several investigators have clearly established that paresthesia elicitation does *not* increase the risk of postoperative neurologic complications. Urban and Urquhart (7) performed a prospective investigation utilizing a variety of regional anesthetic approaches (transarterial, paresthesia, nerve stimulator) during brachial plexus blockade. The overall rate of neurologic complications was statistically higher with the axillary approach compared to the interscalene approach (19% vs 9%, respectively). Risk of postoperative neurologic dysfunction was not affected by type of local anesthetic, number of needle advances, duration of tourniquet inflation, or most importantly anesthetic technique.

The study by Selander et al (8) is often cited to support the premise, "no paresthesia, no dysesthesia." Patients were divided into two groups based on regional anesthetic technique- paresthesia or perivascular. Unintentional paresthesias

were reported in 40% of patients in the perivascular group. Postoperative neurologic complications occurred in 8 of 290 (2.8%) patients where a paresthesia was intentionally sought compared to 2 of 243 (0.8%) patients undergoing a perivascular technique. Although the incidence of neurologic complications between the two groups was not statistically significant, all ten patients with persistent paresthesias had *painful* paresthesias elicited during performance of the block; in three cases the pain was enhanced during injection. In addition, 5 of 10 patients with nerve injury also had supplemental blocks performed at the level of the axilla, elbow or wrist. These results suggest that not all paresthesias are "equal". True pain during needle placement or injection of local anesthetic is not part of the paresthesia technique. Likewise, supplementary injection into a partially blocked plexus should be avoided (8).

Unfortunately, paresthesia critics often fail to recognize the potential complications of alternative techniques. For example, the blunt insulated needles used with a nerve stimulator approach cause discomfort when passing through tissue planes. In addition, the motor response associated with nerve stimulation is sometimes perceived as painful (9). More worrisome is that many advocates of the nerve stimulator approach argue that this technique may be performed on heavily sedated, anesthetized, or uncooperative patients since it provides exact needle localization without the elicitation of a paresthesia. A recent investigation by Choyce and colleagues (10) demonstrated that this may not be the case. During their technique, a non-insulated stimulating needle was advanced until a paresthesia was elicited. At this point, the current on a nerve stimulator was gradually increased until an associated motor response was obtained. Interestingly, after acquiring a paresthesia, nearly 25% of patients required a current >0.5 mA to manifest a motor response, with 42% needing currents as high as 3.3 mA.

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CON

Paresthesia or No Paresthesia?



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There are several well-established techniques for performing peripheral nerve blocks including paresthesia, nerve stimulation and local infiltration. Practitioners utilizing paresthesias for nerve localization claim a shorter time for block placement, faster onset of anesthesia, increased success rate, and decreased personnel requirements. Arguments against the use of this technique include increased discomfort for the patient and a possible increased risk of post-operative dysesthesias. Clinical and laboratory studies to date have not provided a concrete resolution to this debate. However, a brief review of the available literature may help practitioners draw their own conclusions.

A number of studies have been published comparing various techniques used to place peripheral nerve blocks. Taken together, these investigations have not shown that any one technique is superior to another for a particular block. Goldberg and colleagues found that for axillary blockade, transarterial, paresthesia, and nerve stimulator techniques all resulted in similar success rates (1). Correspondingly, McClain and colleagues investigated brachial plexus blockade with the interscalene approach, and found that utilizing paresthesias versus a nerve stimulator resulted in comparable success rates (2). Although both of these investigations reported success rates between 70 and 82%, there have been a multitude of studies reporting success rates



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well over 90% for all three of these approaches (3,4,5). This suggests that individual experience with a technique is the best predictor of success, and that one technique is not inherently more reliable than another.

Time needed to place a block and time until the onset of surgical anesthesia have also been cited as benefits of eliciting paresthesias over other techniques for regional blockade. While studies examining both paresthesias and non-paresthesia techniques report dramatically different times for block placement and anesthetic onset, there is no consensus that any one method consistently requires less time to perform or provides a faster onset of anesthesia. There is certainly no evidence to support the claim that using paresthesias *consistently* decreases either block placement or onset times. For example, Sia and colleagues studying axillary blockade reported a mean performance and onset time of 9 and 21 minutes, respectively, utilizing paresthesias to locate all four nerves, compared with 6 and 18 minutes, respectively, utilizing a nerve stimulator to perform the same task (6). Again, this suggests that individual experience with a technique is probably the best predictor of the time necessary for block placement and onset of surgical anesthesia, and that one technique is not inherently faster than another.

Non-paresthesia techniques have also been criticized for requiring an additional “pair of hands.” However, tools such as the foot control unit for nerve stimulators as well as innovative techniques allow for single-operator block placement without relying on paresthesias (7,8). Furthermore, for procedures in which the non-dominant hand is not needed within the sterile field (e.g. posterior popliteal block), this non-sterile hand may be used to aspirate, inject, and adjust current amplitude.

Non-paresthesia techniques allow the practitioner to avoid potentially painful paresthesias during block placement (2). Moreover, post-operative short-term neuralgias appear to occur more frequently in patients who experienced a paresthesia—intentional or unintentional—during block placement. Plevak and colleagues retrospectively reviewed 716 patients who had axillary blocks placed with either a transarterial or paresthesia technique, and found a *trend* towards post-operative “persistent paresthesias” in the latter group (9). The incidence in the paresthesia group was 2.9% vs. 0.8% in the transarterial group (not statistically significant). Horlocker and colleagues retrospectively reviewed 607 patients who underwent 1614 axillary blocks and found that there was not a statistically significant difference in post-operative “neurologic complications” between the transarterial and paresthesia techniques (10). However, they did find that of patients for whom the necessary data was available, five of six patients with post-operative “neurologic complications” *had* experienced a paresthesia during placement of the block. Finally, Selander and colleagues prospectively studied 533 patients undergoing axillary block with paresthesia and needle-oscillation techniques in their classic article on this issue. They found that of 10 patients who experienced “post-anesthetic paresthesias,” 9 *had* experienced paresthesias during placement of the block (11).

These studies do *not* demonstrate that

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These findings suggest an inconsistency of elicited motor responses, despite the needle presumably being near a nerve. Therefore, the illusion that nerve stimulation allows clinicians to approximate neural structures without the risk of mechanical trauma must be abandoned.

Transarterial approaches to the brachial plexus may also result in potentially devastating complications. Intravascular injection, vascular insufficiency secondary to vasospasm, hematoma or pseudoaneurysm formation, and axillary artery dissection have all been reported with varying frequencies. Hematoma and pseudoaneurysm expansion may result in pressure-induced neural ischemia and subsequent neurologic impairment in patients undergoing brachial plexus blockade (11,12). Pearce et al (13) demonstrated that transarterial injection may be associated with significantly more postoperative dysesthesias when compared to properly performed paresthesia techniques. The authors postulated that subclinical hematomas, *not* paresthesias, may be contributing to the development of transient neurologic symptoms postoperatively.

In summary, paresthesia techniques are a *safe* and *effective* means of performing peripheral nerve blockade. Their mastery requires a detailed knowledge of anatomy, technical aptitude, and astute clinical vigilance. Alternative techniques may be performed, but often at the expense of significantly lower success rates and prolonged onset times. Furthermore, it may be in fact difficult to perform peripheral nerve blockade *without* the elicitation of a paresthesia since unintentional paresthesias will occur in approximately 40% of patients, regardless of regional technique (7,14). Few clinicians attempting a transarterial approach would ignore the "gift" of a paresthesia, and use it to redirect the needle towards the artery. Why? For the same reason Willie Sutton robbed banks: "That's where the money is!"

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International Expert Panel



ASRA Conference on Local Anesthetic Toxicity

November 17-18, 2001
Fontainebleu Hilton
Miami Beach, FL



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using any one technique increases the risks for post-operative paresthesias. Rather, they suggest that *if* a patient experiences a paresthesia during block placement, then he or she is at a greater risk of post-operative dysesthesias. Because *unintentional* paresthesias are often experienced by up to 40% of patients receiving a block by a *non*-paresthesia technique, no prospective study to date has demonstrated an increased risk for post-operative dysesthesias of any one technique (12).

Eliciting paresthesias for nerve localization has not been shown to have any advantages over other techniques, can be less comfortable for patients, and may potentially increase the risk of post-operative dysesthesias. Until more convincing evidence of a "best" technique is available, we suggest careful attention to detail with any technique utilized.

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ASRA Breakfast Panel at ASA

The following program is planned for the ASRA Breakfast Panel at the 2001 ASA Annual Meeting in New Orleans, Louisiana. It is our understanding that the Breakfast Panel will be held from 7:30 until 8:45 AM on Monday, October 15, 2001.

Teaching Regional Anesthesia in the New Millennium – Will Hands-on Techniques Become Obsolete?

Moderator: Marc B. Hahn, DO

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New Hands-on Techniques

Frederick Burgess, MD, PhD

Director of Pain Management and Regional Anesthesia
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The Use of Computer Programs to Teach Anatomy and Techniques

Patrick M. McQuillan, MD

Director of Acute Pain Management and Regional Anesthesia
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Will Haptic Technology Replace Patients for Learning Critical Psycho-Motor Skills?

W. Bosseau Murray, MB ChB, FRCA, MD

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8TH ANNUAL COMPREHENSIVE REVIEW OF PAIN MANAGEMENT

August 2-5, 2001



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