HOT TOPIC

ARE PAEDIATRIC POST-OP EPIDURALS NOW A ROD FOR OUR OWN BACK?

SUMMARY OF KEY POINTS:

- Paediatric epidurals are an advanced technique that are being used less and less.
- Epidurals are logistically difficult in busy hospitals, with nursing teams becoming less familiar with their management and adding to the on-call burden of the anaesthetic team.
- Improvements in peripheral infusion catheters has shown them to be an equivocal form of pain relief when compared to epidurals.

REVIEW OF EVIDENCE

Paediatric epidural rates are on the decline[1]. Given the increasing preference for alternative techniques such as peripheral nerve blocks and wound infusion catheters, we will discuss the advantages and drawbacks of epidural analgesia, considering factors such as procedural complexity, post-operative care requirements and complication rates. We'll then explore alternative approaches, namely paravertebral and erector spinae blocks and look at pain outcomes along with other procedural considerations. Are we coming to the end of ward epidurals for post operative analgesia?

Background

Regional anaesthesia plays a crucial role in paediatric peri-operative care, yet recent years have witnessed a notable shift in its application. The ADARPEF studies conducted in 1993 and 2005 highlight a substantial decline in the use of central neuraxial block in favour of peripheral nerve blocks and wound infusion catheters[1]. These findings resonate on a global scale, underscoring the need to re-evaluate the role of epidural infusions in contemporary paediatric anaesthetics.

Epidural placement in the paediatric population is an advanced technique, but its decreasing use means trainee exposure is less and less. As familiarity decreases, potential for complications increases. Additionally, post-operative care demands specialist nursing and regular review, limiting their allocation to specific wards, which may be tricky amidst mounting bed pressures and nursing expertise. Furthermore, specialist out-of-hours support for epidurals is essential due to the severity of potential complications but as wards see less, out of hours anaesthetic demands will likely increase, which may jeopardise wider patient safety.

Epidural Complication Rates and Considerations

Studies reveal varying complication rates associated with epidurals. A UK-based study in 2007 reported a complication rate of 1 in 189, with severe complications occurring at a rate of approximately 1 in 2000[2]. This surpasses the incidence of complications in central neuraxial blockade seen in the ADARPEF study (1 in 345) but their comparison of central neuraxial blockade with peripheral blocks shows peripheral neuraxial blocks to be seven times safer[1].

Alternatives and Comparative Analyses

Good post operative pain management is not only associated with reduced patient and parent anxiety, avoiding potential long-term psychological sequalae, but it is also linked with better complication rates and reduced use of resources[3]. In major thoracic cavity surgery, opiates have been shown to be inferior to epidurals and given the negative side effects of these medications we are keen to encourage the use of other advanced regional techniques[4]. A meta-analyses looking at paravertebral blocks or erector spinae blocks with continuous wound infusion catheters compared to thoracic epidurals suggested that while epidurals may offer slightly superior pain relief immediately post-operation (<12hours), continuous nerve blocks offer equivalent pain management and reduced opiate use over 72 hours[5]. It was also noted that the continuous wound infusion group had shorter lengths of stay, and less distress during transitioning to oral medications[5].

Paravertebral and erector spinae blocks have demonstrated efficacy in a range of thoracic and abdominal surgeries from adults to neonates[6]. They offer low-risk profiles and seemingly comparable analgesic benefits. Complications primarily involve local structural damage, with severe consequences being rare[6].

When comparing continuous peripheral infusions and epidurals however, pain scores, complication rates and the severity of these complications are not the only things to consider. Studies have shown increased anaesthetic time when performing epidurals compared to peripheral infusions. This is particularly interesting in light of growing concern around the risk of anaesthetic exposure on neurodevelopment in paediatric population and achieving a balance with theatre efficiency[7].

Other points of comparison are the rates of physician intervention, which is far higher in the epidural groups. This is in part due in part to high epidural failure rates of up to 35% seen in some studies. There is also an increased number of days to catheter removal in the epidural group[8].

Conclusion

Given advancements in equipment, we feel emphasis should shift towards increasing proficiency in peripheral regional anaesthesia with indwelling catheters for post-operative analgesia. We believe this approach promises streamlined post-operative care with equitable pain relief, greater safety margins, smoother transition to oral medication, less physician intervention and expedited discharge for paediatric patients.

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