[NM-251] Postdural Puncture Headache Algorithm: A Standardized Approach for Diagnosis and Treatment.

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Post dural puncture headache (PDPH) can be difficult to diagnosis and treat in the pediatric population. It is difficult for primary care givers to definitively diagnosis PDPH and consequently, these patients may not receive proper and timely treatment. When it does occur, PDPH can lead to profound morbidity leading to missed school days and limited function. We have created a PDPH algorithm that addresses the difficulty of diagnosis, management, and treatment.
Our protocol has a uniform diagnostic pathway that uses criterion from the International Headache Classification (1): The diagnosis box addresses onset, body position at onset of headache, and associated symptoms. Clinical history is vital to obtain since laboratory studies and imaging do not help with diagnosis. All other diagnosis must be excluded, and a list of differentials is included(2).
The algorithm addresses the issues of diagnostic ambiguity and splits between a straightforward assessment versus a challenging diagnosis. If the diagnosis is certain, a trial of symptomatic treatments is started (2). Opioids or patient controlled analgesia are not part of this algorithm because they are neither indicated nor helpful. If symptoms suggest a possible PDPH but could be explained by another process, aggressive evaluation is initiated including consultation of pain management and neurology.
Another clinical dilemma is to determine when to stop conservative treatment and instead, offer an epidural blood patch. Based on the natural history of PDPH, there are diminishing returns in waiting for spontaneous resolution after four days. Thus, if patients do not improve within three days, an epidural blood patch is offered.
An application of the protocol involves a 5-year-old female with a history of migraines that presented with a headache after a diagnostic lumbar puncture. Conservative therapy failed to improve headache after 3 days and it worsened in severity. As per protocol, epidural blood patch was offered and accepted. She was brought to OR and induced with sevoflurane. The epidural space was found and 0.4cc/kg of blood was injected at L4-5 level. Patient had resolution of her symptoms within 2 hours.
Our algorithm standardizes and simplifies the diagnosis and treatment of PDPH. The use of a uniform diagnostic pathway can: improve recognition and access to care; limit unnecessary hospitalizations; and gives non-anesthesia providers new criteria for calling a pain management consult. We hope that it provides other departments with tools to use all available conservative treatment options and gives an end point to when more invasive treatments should be offered.
References
(1)Headache Classification Subcommittee of the International Headache Society. The International Classification of Headache Disorder, 2nd ed. Cephalalgia 2004; 24 (Suppl 1): 9-160.
Attachement
(2) Post Dural Puncture Headache PRevention, Diagnosis, and Managment

Post Dural Puncture Headache Prevention, Diagnosis, and Management

Prevention

1) Smallest needle consistent with good care
2) Atraumatic tip preferred
   (e.g. Whitacre, Sprott point)
3) With bevel tip needle, orient bevel parallel to spine

Diagnosis

1) Postural headache following dural puncture procedure within preceding 5 days
2) Worsens within 15 minutes upon upright position
3) Improves within 15 minutes upon recumbence,
4) One additional symptom: Nick stiffness, tinnitus, hypoacusia, photophobia, nausea/emesis

Differential diagnosis includes:
-meningitis, bacterial, vital or chemical
-intracranial hemorrhage
-venous thrombosis
-tumor
-sinusitis or migraine
-drug induced headache

Imaging or labs:
As indicated only to evaluate for clinically relevant alternative diagnoses.
PDPH is a clinical diagnosis after relevant alternatives are excluded.
Coags and plt count if risk factors for this exists.

Management

Symptomatic care.
1) Supine position
2) Maintain normal hydration
3) NSAIDS or acetaminophen

If admitted for emesis, hydration, or pain:
IV fluid load 20ml/kg, then 1.5X maintenance
Consider caffeine 10 mg/kg up to 500 mg up to bid

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Natural history of PDPH:

Percent resolved,	days with headache
24%	2 days
55%	4 days
74%	1 week
85%	1 month
95%	1 year

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Criteria favoring referral for Pain Consult any two:
1) Unable to perform normal ADL > 3 days
2) Missed 2 days of school
3) Headache of duration >3 days

Anesthesia Pain Service:
Business hours before 4pm, 294-OUCH
After hours and weekend, 291-1111