Guidance for the treatment and prevention of Phantom Limb Pain

Liz Colquhoun, Val Shepherd, Dr Michael Neil, Dr Calum Grant
Acute Pain Team, Ninewells Hospital, Dundee DD1 9SY, United Kingdom

Introduction

This guideline was initially produced as part of a Masters in Pain Management dissertation completed by a member of the Acute Pain Team through Cardiff University. The development and evolution of the guideline and ongoing audit are a result of collaborative work by the Acute Pain Team and the vascular department within Ninewells Hospital, Dundee.
The SBAR (Situation, Background, Assessment, Recommendations) framework has been utilised to present this work.(1)

Situation

•Evidence of poorly controlled phantom limb pain (PLP) in NHS Tayside- incidence from local audit (2012) is 83% which is comparable with the higher end of the national average. (2)

•No definitive published guidance was uncovered to inform the treatment of PLP in the perioperative period and the prevention of the development of persistent PLP.

Background

•PLP is a widespread and challenging neuropathic pain problem occurring after both surgical and traumatic amputation of a limb. PLP may occur immediately after surgery or some months later, although most presentation is within the first seven postoperative days.(3)

•Worldwide, the incidence of PLP has been reported to be between fifty to eighty five per cent following amputation. (4)

•Patients report a wide range of pain characteristics in the absent limb including burning, cramping, tingling and electric shocks. (5)

•Management of PLP is notoriously difficult, as it is often resistant to classic balanced analgesia resulting in the use of adjuvant therapy with mixed levels of success.(6)

•Treatment can be somewhat ad hoc dependent on Acute Pain Team availability, specific anaesthetist etc. Ward rounds are mainly nurse led resulting in the specialist nurses advising junior medical staff regarding management.

•The provision of more standardised, safe, evidence based treatment, taking cognisance of patient specific factors (age, co morbidities, renal function etc) and contemporary research would enhance patient safety and ensure appropriate governance.

Assessment

•Following reflection on current local practice an extended literature review was carried out to critically evaluate and synthesise the evidence pertaining to a range of adjuvant treatment options. (7)

•Reduction in post operative pain scores, the incidence of related side effects and, where possible, the effect on long term pain scores and functional outcomes were examined.

•Whilst there were a small number of randomised controlled trials the majority of evidence available was either retrospective in nature or used case reports or series (a commonly experienced barrier in pain research where the subjective nature of pain and ethical issues regarding the denial of treatment are particularly pertinent).

•Common themes included the disparity between a lack of statistical significance reflected in results and the clinically significant outcomes experienced by patients, the lack of appropriate and accurate pain assessment, and difficulties in attributing direct causality.

•Low levels of evidence(8), due in part to the methodologies adopted, precluded a prophylactic protocol for all patients. A pragmatic approach, however, taking cognisance of the central tenets of beneficence and non malevolence, suggested the production of a guideline for best practice reflecting an adapted multimodal approach.

NHS Tayside

Developed by Acute Pain Team. Review date July 2014

PERIOPERATIVE ANALGESIA FOR ACUTE PHANTOM LIMB PAIN- BEST PRACTICE GUIDELINE

THE FOLLOWING RECOMMENDATIONS ARE EVIDENCE BASED. THIS GUIDELINE DOES NOT PRECLUDE INDIVIDUAL, PATIENT CENTRED, TREATMENT OPTIONS AND CLINICIAN CHOICE.
PLEASE HIGHLIGHT PATIENTS TO THE ACUTE PAIN TEAM AT EARLIEST OPPORTUNITY (BLEEP 4311)

HIGH RISK PATIENTS:

Previous ipsilateral amputation	High preoperative opioid use
Severe preoperative pain	Known or suspected drug dependency
Repeated vascular surgeries	Psychological vulnerability (eg catastrophising)

STANDARD PERIOPERATIVE REGIME:

PERINEURAL LOCAL ANAESTHETIC INFUSION

- Instigate preoperative block where possible- contact Acute Pain Team (bleep 4311) or out of hours anaesthetist (bleep 4017) to explore availability.
- BKA = sciatic +/- femoral; AKA = sciatic + femoral
- Initial intraoperative bolus followed by infusion of Ropivicaine 0.2% at a flow rate of 10 mls/hr (400ml ball) (5mls/hr if both sciatic and femoral block utilised)
- Renew elastomeric infusion device at least once then allow to run out and assess need for further renewal (may need additional elastomeric device if pain intensity increases on cessation)

GABAPENTANOIDS **

Also refer to NHS Tayside Neuropathic Pain Guidelines

GABAPENTIN (1ST LINE)

- If **already prescribed**, optimise dose (consider upwards titration prior to surgery)
- If treatment failed with Gabapentin, change therapy to Pregabalin

OR

PREGABALIN (2ND LINE)

- Initiate if fast onset is required or on advice of Acute Pain Team -instigate preoperatively where possible.
- Starting dose of 75mg BD for one week, then stepwise titration**
- Titrate to effect/ side effects (maximum daily dose: 600mg)**

IF ACUTE PLP UNCONTROLLED CONSIDER ADDING:

SALMON CALCITONIN

- Commence on day of surgery (best clinical results when used pre-emptively)
- Subcutaneous once a day administration
- Dose: 100IU/day for 5-7 days
- Alert Acute Pain Team when prescribed so that use/ efficacy can be audited

NMDA RECEPTOR ANTAGONISTS **

FIRST LINE: KETAMINE

- In high risk patients, consider initial intra-operative bolus dose (0.5mg/kg at induction prior to incision, then additional boluses of 10mg approximately every hour during surgery)
- IV infusion of 5mg- 15mg/hr (conc. 5mg/ml)- consider in high risk patients or as rescue analgesia
- Continue for 48-72 hrs

SECOND LINE: MEMANTINE (CONSULTANT APPROVAL AND IPTR REQUIRED)

- Consider when intolerable side effects experienced with IV Ketamine or IV access not available
- Oral administration (starting dose 5mg/day, increase to 5mgBD after one week)
- Titrate to effect/ side effects (max. daily dose: 20mg)

***NB** ** DOSE REDUCTION SHOULD BE CONSIDERED IN THE FRAIL, ELDERLY AND RENAL OR HEPATIC INSUFFICIENCY OPIOIDS MAY CONTINUE FOR ALEVIATION OF STUMP PAIN BUT WILL HAVE LITTLE EFFECT ON PLP*

Recommendations

•The proposed guideline has been developed by the Acute Pain Team, in conjunction with both anaesthetic and vascular teams and is currently being trialled within the vascular unit.

•The Acute Pain Nurses continue to audit its use and efficacy whilst in hospital and at three month follow up post discharge.

•In conjunction, a rolling programme of education has been facilitated to ensure improved pain assessment and awareness of PLP. (9)

•A patient information leaflet is currently in development both to inform patients and to gather patient stories and evidence of clinical effect.

•Early audit results suggest an encouraging improvement in post amputation pain management and high levels of patient satisfaction.

Acknowledgements:
This work was originally undertaken by Liz Colquhoun as part of a Masters in Pain Management dissertation. Thanks and acknowledgment must be given to the course team at Cardiff University and especially the dissertation supervision provided by Sue Jenkins (Senior Lecturer, Department of Anaesthetics, Intensive Care and Pain Medicine, School of Medicine, Cardiff University).

References:
Pope, B. , Rodzen, L. , Spross, G. (2008). Raising the SBAR: how better communication improves patient outcomes. Nursing. Vol. 38(3). Pp.41-43. 2) Kearsley, A. , Raghavan, S. , Pearson, K. , Neil, M. (2012).Phantom limb pain after amputation. *Poster: World Society of Pain Clinicians, 15th World Congress*, Granada, June 27th-30th 2012. 3) Dijkstra, P.U. , Geertzen, J.H. , Stewart, R. , van der Schans, C.P. (2002). Phantom pain and risk factors: a multivariate analysis. Journal of Pain and Symtom Management. Vol. 24(6). Pp. 578-585. 4) Schley, M. , Topfner, S. , Wiech, K. , Schaller, H. , Konrad, C. , Schmelz, M. , Birbaumer, N. (2007). Continuous brachial plexus blockade in combination with the NMDA receptor antagonist Memantine prevents phantom pain in acute traumatic upper limb amputees. *European Journal of Pain*. Vol.11. Pp. 299-308. 5) Weeks, S. , Anderson-Barnes, V. , Tsao, J. (2010). Phantom limb pain: theories and therapies. *The Neurologist*. Vol. 16(5). Pp. 277-286. 6) Hackworth, R. , Tokarz, K. , Fowler, I. , Wallace, S. , Stedje-Larsen, E. (2008). Profound pain reduction after induction of Memantine treatment in two patients with severe phantom limb pain. *Anesthesia & Analgesia*. Vol. 107(4). Pp. 1377-1379. 7) National Institute for Health and Clinical Excellence Guidelines manual (2009)- Appendix 1, methodology checklist for qualitative research. (http://www.nice.org.uk/media/633/7F/The_guidelines_manual_2009_Appendix_I_Methodology_checklist_-_qualitative_studies.pdf) 8) Scottish Intercollegiate Guidelines Network (SIGN 50) guidelines. (http://www.sign.ac.uk/guidelines/fulltext/50/annexb.html). 9) Shepherd, V. , Colquhoun, E. , Smethurst, G. (2012). PAINGO: asking helpspaingo! *Poster: 22nd National Acute Pain Symposium*, Chester, September 13 and 14th 2012