Validation of practice based evidence for 
effective management of 
Chronic Migraine and Occipital Neuralgia 
in the Post 9/11 Combat Veteran
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Patient Experience
• 54 yo male with a history of refractory headaches increased after 2004 deployment
• Started in 1992 with parachute jump, hard landing, hit head to the left, with Loss of Consciousness (LOC)- 2004- Improvised explosive Device (IED) blast with LOC
• Described as Left hemi-cranial throbbing/aching associated with photophobia/phonophobia, Nausea/Vomiting & worse with exertion. Rated as 10/10
• Occurring 2-4 times per month lasting 3-6 days
  ~ (up to 24 days per month debilitating headache, plus a daily posterior headache)

Overview of the Headache Population
• The Headache clinic was established in November 2013
• Patient population:
  • Refractory headache patients- most have failed Primary Care treatments, many have also failed Neurology, all seeking alternatives
  • Common types of headache- Migraine, Occipital Neuralgia, Tension, Cervical degeneration
  • Common co-occurring diagnosis- prior hx of head and/or neck injury, PTSD, Insomnia, Anxiety/Depression, Musculoskeletal pain,

Conceptual Framework
• The Headache Clinic utilizes a Chronic Care Model
  • Incorporate multiple modalities:
    • Traditional and Alternative
    • Medication
    • Botox
    • Occipital blocks
    • Acupuncture
    • Cefaly/Alpha-stim
    • Relaxation techniques
    • Aromatherapy (Peppermint oil)
    • Patient education (continual)

Study Purpose
• Headache clinic utilizes:
  • Onabotulinum A (BOTOX) every 12 weeks
  • Occipital blocks every 4-8 weeks as needed
  • Treating combat veteran with a history of:
    • traumatic brain injury(TBI)
    • neck trauma/whiplash with chronic migraine (CM)
    • occipital neuralgia
  • Based on the available evidence/anecdotally this seemed to be very effective
  • Validation through empirical practice based evidence was needed
Study Disclaimer

• This study:
  • Was been reviewed and approved by the Central Texas Veterans Health Care System (CTVHCS) Institutional Review Board and University of Alabama at Tuscaloosa
  • This material is the result of work supported by resources at the Central Texas Veterans Health Care System
  • Does not necessarily express the views of the Department of Veterans Affairs or the United States Government nor does mention of trade names, commercial products, or organizations imply endorsement by the U.S. Government

Background

• CM in the post 9/11 combat veteran with a history of TBI is 20% or more: even after 11 years of treatment (Couch & Stewart 2016; Patil et al., 2011)
  • General population CM rate is 4 - 5% (Munakata et al., 2009)
  • CM causes: reduced work and quality of life, increase in ER and primary visits (Munakata et al., 2009)
  • Young population: average age of post 9/11 combat with CM 29-30 years of age (Altalib et al., 2016)

Knowledge Gap

• Current treatments: medications for prevention (Topiramate) and Onabotulinum Toxin A (BOTOX) (Yerry, Kuehn, & Finkel, 2015)
  • Treatments failure: wear off of Botox before 12 weeks and do not fully address the occipital neuralgia
  • Occipital neuralgia is common after traumatic brain injury (TBI)/neck trauma and may be part of the CM (Ducic, Sinkin, & Crutchfield, 2015; Zaremski, Herman, Clugston, Hurley, & Ahn, 2015)
  • Occipital Blocks have been an effective treatment for occipital neuralgia and short term relief of CM (Cuadrado et al, 2016; Gul, Ozon, Karadas, Koc, & Inan, 2016)

(Onabotulinumtoxin A “Botox”) Injection Paradigm

31 injections into 7 muscle groups

The sensory distribution of the trigeminal nerve (cranial nerve V) and its three divisions (V1, V2, V3) are show along with branches of the cervical spinal nerves that innervate cutaneous regions of the head and neck.

Image courtesy of UpToDate

Cutaneous innervation of the head and neck

Occipital Nerve Anatomy
Occipital Block Injection Sites

GON aiming slightly up maintaining a subcutaneous course
LOC aiming lateral and up, maintaining a subcutaneous course
Occipital block consisted of 1 to 1 ratio of 1% Lidocaine &
0.5% Bupivacaine, 1 mL into the greater and 0.5 mL into the lesser

Methodology

- History of TBI or neck trauma/whiplash
- Findings of CM & Occipital Neuralgia
- Treated with Botox and Occipital Blocks
- 282 patient charts reviewed > 137 Dx w/CM & Occipital neuralgia
  > 107 excluded (did not fit all the criteria) > 30 were included

Data Collection

- Number of self-reported headache days per month (28 days)
  - The month prior to treatment in the headache clinic
  - 6 months after treatment in the headache clinic
  - Mean and 95% confidence interval for # of Headache days/month for pre and post intervention for each subject was computed
  - Binomial mixed regression model to determine if the mean # of headache days is significantly lower post intervention

- Dependent Variables: headache days per month (28 days)
- Independent variables: age, gender, head or neck trauma, headache types (migraine, tension, occipital neuralgia, medication overuse), comorbid diseases (mood disorders of anxiety, depression or PTSD, musculoskeletal pain, insomnia), prior headache treatments and treatments in the headache clinic of Botox and occipital blocks

Patient age

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<td>27-34.1</td>
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<td>(34.1, 41.2]</td>
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<td>(41.2, 48.3]</td>
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Veteran ages ranged from 27 to 55.4 years of age. 80% were between the ages of 27 and 41.2 years

Number of Veterans

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Headaches started after the head or neck trauma

PRIOR PREVENTATIVE MEDICATION TREATMENTS

Number in the graphic represents the number of veterans who had taken the medication for migraine prevention prior to treatment in the headache clinic. 13 veterans had trials of ≥ 3 medications.
Gender Distribution of Patients Treated

Results

- Mean number of headache days in the month prior to treatment was 24.1 (22.0, 25.7)*
- Mean number of headache days in the month post-treatment was 12.9 (9.7, 16.4)*
- Mean difference in number of headache days (pre-treatment minus post-treatment) was 11.2 (8.2, 14.2)*
- Findings were clinically and statistically significant

*Numbers in parenthesis are the 95% Confidence Interval

Limitations/Needs

- Results are promising in treating CM and Occipital neuralgia with Botox and Occipital Blocks
- Limitations:
  - Inability to have treatment and control group
  - small sample size (N=30)
  - self report for only one month pre and post treatment
- Needs:
  - Long term study
  - Larger cohort controlled for confounders
  - Additional studies for CM/Occipital neuralgia treatment in the veteran population

Final Thoughts

- Post 9/11 combat veterans, with a history of TBI or neck trauma/whiplash with findings of CM and occipital neuralgia, who have not had satisfactory relief of their CM with conventional medical treatment, may have a reduction in the number of days of headache after treatment with occipital blocks and Botox
- In other words: it may reduce the headache burden and improve quality of life
References

References
