SERVICE EVALUATION Knowledge of red flags, signs and symptoms for cervicogenic headaches: An evaluation of treatments and patient outcomes post a training intervention in a musculoskeletal primary care setting.

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Abstract

Abstract Rationale aims and objectives Physiotherapy is recommended for cervicogenic headache (CGH) with 4% of headache patients currently referred to secondary care. The aim of this service evaluation was to explore knowledge of CGH signs and symptoms (SS) and headache red flags (HRF) among musculoskeletal (MSK) physiotherapists during a headache training session. This session was identified as a training need by the learning and development team following a previous headache training session. Post training, treatment choices and patient outcomes for 10 patients were explored as recommended by an Audit Committee. METHOD Nine physiotherapists undertook a 3-hour training session on headaches, completing an HRF/SS questionnaire focused on CGH, before and after training. Post training, 10 CGH patient were assessed and treated by participants. Treatment choices were compared with current best practice and patient outcomes were collected, using the Neck Pain Bournemouth questionnaire (NP BQ). Treatment data was gathered via an electronic patient record system between June 2016 and August 2017. Results Prior to training, participants achieved a correct answer frequency of 58% and 64% for HRF and SS respectively. Post training, this increased to 87% and 91% respectively. Post treatment, 70% of patients had an improvement of over 80% and 30% had an improvement of between 30% and 43%. In terms of modalities used, 40% of participants received acupuncture and 12% had manual therapy. Advice was given to 5.8% and 4.6% used exercises. Soft tissue massage and balance were used in 2.3% an 1.2% respectively. Conclusion Clear training needs were identified initially, and knowledge improved after training, together with evidence-based choices for treatments. All patient symptoms improved during care.

SERVICE EVALUATION

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METHOD

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Keywords

Cervicogenic headache, Physiotherapy, Headache red flags

Introduction

Current literature suggests headaches affect 2 thirds of the global population and are amongst one of the most frequent presentations in General Practice. [1,2] I n the UK, NHS England have calculated a 4.4% consultation rate of headaches with neck pain comorbid in 68% of primary headaches. [3,4]

The present UK National institute for Health and Care Excellence (NICE) guidelines for headaches, were developed in 2015 and have been specifically constructed, for use in a non-specialist setting, including primary care. Within the NICE guidelines, a knowledge of headache presentation and associated red flags are considered essential for effective and safe patient care.[5] During assessment a comprehensive history is essential to diagnose and manage a benign headache, whilst excluding potential sinister pathology .[6] Given the prevalence and frequency of headache presentation, this is an important area to consider for physiotherapists working within primary care.

Primary headaches are defined through exclusion, as not being due to underlying or potentially sinister pathology. The consensus is that primary headaches can be safely diagnosed and managed, utilising NICE guidelines. [7,5]

In contrast, secondary headaches may have heterogenous aetiologies that are more concerning. For example, secondary causes can include glaucoma, intercranial malignancy, infection, haemorrhage and idiopathic intercranial hypertension.[8] Consequently, recognising red flags associated with headaches, is crucial in allowing sinister causes to be ruled out. [9]

Red flags were first utilised by the clinical standard advisory group in 1994 for spinal screening. In 2003 SNOOP was proposed as the first early detection screening tool for secondary headaches.[9]These guidelines have since been modified and expanded by national and regional guidelines[10] with NICE 2015, advocating specific SS to be screened in secondary headache presentation

(Figure 1).

SNOOP, a useful mnemonic, is considered to be a helpful tool for clinicians in identifying HRF **(Figure 2).** [11]

Despite the importance of knowledge of HRF for physiotherapists, there are few studies currently available on the use of these in clinical practice. In an exemplar case study in 2019, a primary diagnosis of CGH was initially made but considering the presence of several key indicators of HRF, onward referral was initiated. An MRI scan revealed a Craniopharyngioma and subsequent surgery was required to remove the tumour mass. The patient made a full recovery after 6 months of rehabilitation. This case study concluded that more research was required around the use of HRF and warning signs, during head and neck examination and the importance of such knowledge for physiotherapists, as primary care clinicians .[12]

In 2013, CGH was identified as an international classification of headache disorder (ICHD). Arising from the neck, pain typically radiates to the ipsilateral oculo-fronto temporal area. [13]Differential diagnosis can be challenging, as symptoms may mimic other disorders, such as tension headache or migraine. Consequently, there is some scepticism in the literature about the existence of CGH as a defined clinical entity.[14,15] The underlying pain mechanisms for cervicogenic headache are thought to involve a convergence in the trigeminocervical nucleus, between the cervical and trigeminal afferents with nociceptive afferents arising from C1, C2 and C3 spinal nerves in the trigeminal afferents, converging on to the second order neurones. These neurones will also receive afferents from the first division of the trigeminal nerve(v) and from adjacent cervical nerves, via the trigeminal nerve spinal tract **(Figure 3).**Trigeminal afferent convergence is postulated to facilitate pain referral into orbital, frontal and parietal areas.[15,16]

The current evidence supports the use of physiotherapy treatments including manual therapy, exercises, soft tissue therapy, advice and acupuncture, for CGH).**[13,17,18]** In 2015, the AACP, (Acupuncture Association of Chartered Physiotherapists) examined the evidence for the effectiveness of acupuncture for migraine, tension-type headache and CGH resulting in support of the use of this modality given the caveat of adequate training skills. **[19]**

Treatment selection must be appropriate and effective as determined by evidence. [20]Through effective clinical reasoning for the assessment and management of headache presentations, with the patient's beliefs and lifestyle factors considered, improved patient care can be achieved. **[21]**

Medication overuse headaches have been recognised as an ICHD, since 2004.[22] It is understood, that excessive usage of analgesia and other headache medication, could be causative, rather than preventative for frequent headaches with studies suggesting that the use of non-steroidal anti-inflammatory drugs, on more than 15 days a month can exacerbate symptoms. A combination of opioids, triptans, or ergots on more than 10 days a month, can also elicit exacerbation.**[23]** During headache assessment, it's important that the physiotherapist has an understanding of medication patterns and medication overuse headaches. **[23]**

Method

Participants and Process

During an NHS Trust wide training day, involving an MSK physiotherapy team from Southern England, a one-hour training sessions was delivered on CGH. From feedback after the session, further training for headaches was requested with several participants commenting that they had not learnt about headaches at undergraduate level and that their knowledge and skills were limited. There was a particular interest in CGH, due to MSK related neck pain often associated with it. Patient safety and HRF was also identified as an important area for further training.

Following identification of learning needs from within the team, 9 MSK Physiotherapists from Southern England, received a 3-hour training session on headaches and red flags. The session focused on headache identification, assessment, treatment, clinical reasoning and red flags. Before and after the training, physiotherapists completed a questionnaire concerning red flags and signs and symptoms of CGH. These areas were chosen, as they were identified as a particular training need, from feedback gained.

Following discussions with the NHS Trust audit committee, it was recommended that patient outcomes and treatments should also be evaluated following training. Consequently, 10 patients with CGH were assessed and treated by physiotherapist who attended the training.

The patients involved in the study, completed a NP BQ during initial assessment and after treatment was completed. The NP BQ is a comprehensive multidimensional core outcome tool. It was initially developed for non-specific low back pain, but a later version was adapted for neck pain. As CGH is frequently comorbid with neck pain, it was considered to be an appropriate tool for this study. The NP BQ looks at the impact of functional activities, depression, social interaction and fear avoidance.[25] With an emphasis on the biopsychosocial model, incorporating elements of the patient's narrative, it was considered to be the most meaningful patient outcome for this evaluation.

Treatments choices were explored as compared against current evidence. After each treatment session, the physiotherapists noted the treatments they used. Data was then collected via an electronic data collection system (RIO) with the Trust data warehouse results, generating from Tableau.

Training Questionnaire

The training questionnaires were created by the author, using the NICE guidelines and other valid resources.[5,20,26] See supplementary files.

The training questionnaire, was completed by participants before the training session. Section 1 consisted of 13 possible HRF, whilst section 2 listed 11 possible S/S of CGH. Participants were instructed to tick the correct answer. The questionnaire was completed again after the training session.

Treatment

Physiotherapists entered treatments they utilised within each patient session via RIO. The patients NHS number were then retained for analysis only. Any patient data was shredded immediately after analysis, to protect patient confidentiality. Headache treatment data was collected from June 2016 – August 2017.

Patient Outcomes

Patients included in the study, completed the NP BQ on initial assessment and again at discharge. Before treatment, each patient's average score was calculated from the seven questions on the NP BQ.s.[25] After treatment the average score was calculated again. The scores before and after for each patient were then compared against each other. By doing this a percentage of improvement was determined.

Results

Training Questionnaire - Signs and Symptoms for CGH

Before training the SS questionnaire for CGH, had a mean correct score of 65% whereas post training, this mean score increased to 91%.

Training Questionnaire - Red Flags

A mean correct score of 58% was found before training using the red flag training questionnaire. However, immediately after the training session, this score improved substantively to a mean of 87%.

Treatments

Acupuncture was found to be the treatment most frequently chosen, with 41 % of patients receiving this modality. Manual therapy was included with 12% of patients and around 6% of patients were given advice.

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Exercises were employed for around 5% of patients, soft tissue therapy for around 2% and massage therapy for around 1%. Balance therapy was used in only around 1% of patients.

Patient Outcomes

At discharge, NP BQ scores revealed positive outcomes. 70% of patients experienced an improvement of over 80%+ Improvement. 30% of patients reported an improvement of between 30% and 43%.

Discussion

Most primary headaches, can be safely diagnosed and managed,using treatment approaches recommended in the NICE 2015 headache guidelines. During assessment, it is important that physiotherapists are able to identify headache types. [20] Red flags screening for headaches, is essential for safe patient management, to identify the presence of potential secondary headache types and exclude sinister pathology.[6]

Through this evaluation process, training needs were identified and improvement measured within this group. Treatments used by participants post training, were recommended in the current evidence. From these findings, it is clear that the physiotherapists were providing evidence-based treatments. The NP BQ scores results after treatment, suggest that participants were achieving effective patient care outcomes.

Limitations

As the primary care setting was spread over many sites, lack of communication could have reduced compliance. During the 3 hour training session, there were only 9 physiotherapists participating. Given such small numbers of participants and patients, these results should be interpreted with caution.

Conclusion

A knowledge of headaches and HRF screening tools are an important consideration for physiotherapists, when treating headaches and neck pain, within a primary care setting. This service evaluation has shown the value of a short training session in this area, for knowledge acquisition and subsequent evidence-based treatment choices and improved patient outcomes.

Future research might explore physiotherapists knowledge of red flags for headaches in primary care. In addition, follow up after longer periods of time, would be useful to evaluate the retention of knowledge.

Conflict of interest statement – I have no conflicts of interest to declare

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Figures

Figure 1 : Nice 2015 Headache in the over 12s Diagnosis and managemen t[9]

Figure 2 SNOOP Mnemonic for Red Flags for Secondary Headaches –(Didick) 2003 [11]

Figure 3 Pain referral mechanism from the cervical spine to the head – (Bogduk & Govind, 2009).[15]
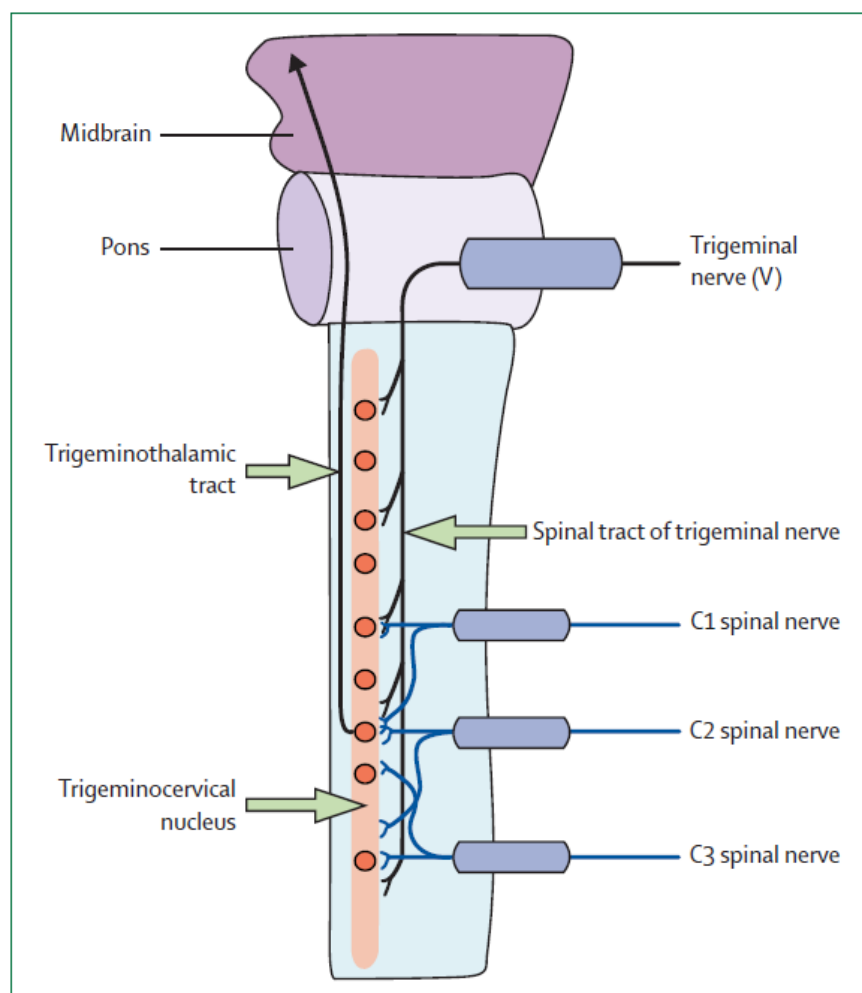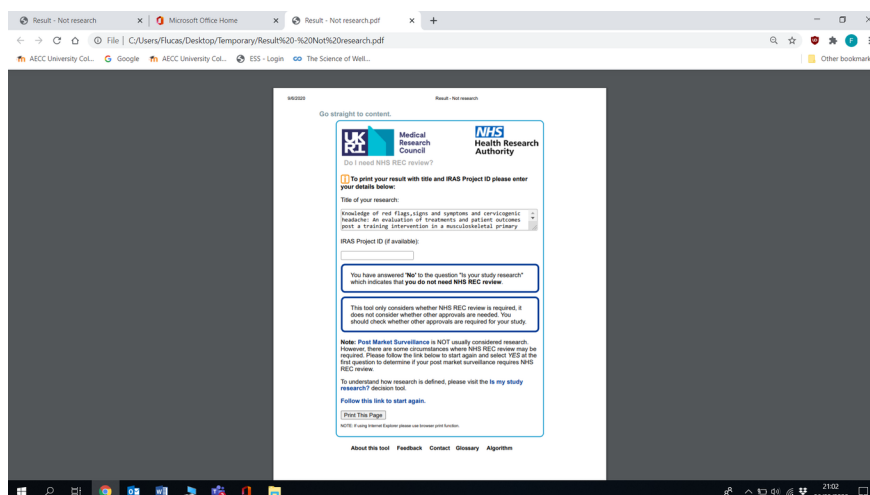
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Figure 1: Mechanism of pain referral from the cervical spine to the head
Nociceptive afferents of the trigeminal and upper three cervical spinal nerves converge onto second-order neurons in the trigeminocervical nucleus in the upper cervical spinal cord. This convergence mediates the referral of pain signals from the neck to regions of the head innervated by cervical nerves or the trigeminal nerve.

Ethics

I used the following tool to see if ethics was required http://www.hra-decisiontools.org.uk/research/

It was not required for this service evaluation.

APPENDICIES

Cervicogenic Headache Questionnaire

Red Flags - Section 1

Which of the following are red flags for Cervicogenic headaches?

Please tick the correct answer

Constant headache x

New headache if over 60 years x

Headache that changes on position x

Thunderclap headache x

Weight loss x

Night sweats x

Headache changing location/frequency x

New headache if over 40 years \euro

Neurological symptoms for under 60 mins \euro

Neurological symptoms for over 60mins x

Headache worsened by neck movements \euro

Headache worse on neck flexion and rotation \euro

Headache worse on cough/sneeze/strain x

Cervicogenic Headache Questionnaire

Section 2

Which of the following are signs and symptoms of Cervicogeinic headaches?

Throbbing headache x

Pain starting at the ear \euro

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Headache worsened by neck movements x

Headache changing location/frequency \euro

Starts at neck with ipsilateral oculo-fronto temporal spread x

Females suffer more the males x

Constant headache \euro

Restriction in range of neck movement x

Nausea x

External pressure over the symptomatic side x

+Ve VBI test \euro

+Ve Cervical rotation test x

NICE 2015 Headaches in the over 12s Diagnosis & Management
- Worsening headache with fever
- Thunderclap headache
- New onset neurological deficit
- New onset cognitive dysfunction
- Change in personality
- Impaired levels of consciousness
- Head trauma in previous 3 months
- Headaches triggered by couch, valsalva, or sneeze
- Headache triggered by exercise
- Headache that changes with posture
- Clinical features of giant cell arteritis
- Clinical features of glaucoma
- Significant change in characteristic of headache
- Atypical aura

The SNOOP mnemonic for red flags for secondary headaches

- **Systemic** symptoms (Fever, Weight loss) or
- **Secondary** risk factors –underlying disease (HIV, Cancer, autoimmune disease)
- **Neurological** symptoms or abnormal signs
- **Onset:** Sudden, abrupt or split-second (first, worst)
- **Older age onset** : new onset and progressive headache, especially in age>50 (giant cell arteritis, cancer).
- **Pattern Change**: first headache or different, change from
- **Previous** headache history: attack frequency, severity or clinical features