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EFFECT OF MASSAGE ON BLOOD PRESSURE IN PATIENTS WITH HYPERTENSION: A META ANALYSIS

Maheshkumar K, V.Venugopal, C. Yogapriya, A. Akila, B. Deenadayalan, M.Pandiaraja, S.Poonguzhali

Introduction: Hypertension (HTN) is a chronic disease that affects 1.13 billion people worldwide. Successful management of HTN could be achieved through integrating pharmacological and non-pharmacological interventions. Massage therapy is one of the globally accepted CAM therapies which relieves bodily infirmities and promotes well-being known to reduce high blood pressure, and is documented to reduce high blood pressure.

Objective: Objective of the current meta-analysis is to evaluate the effect of massage on blood pressure in patients with hypertension.

Methods: Electronic databases (such as PubMed, Prospero, Scopus, ClinicalTrials.gov, Embase, and Cochrane Library) were searched since inception up to March 2021. All experimental trials which met the (PICO) criteria were included. The main outcome was systolic and diastolic blood pressure. Meta-analysis was performed using random-effects model to produce a summary of treatment effects in terms of effect size (Hedge's 'g') with 95% Confidence Interval (CI).

Results: Six studies were included for the review, in which 290 patients participated, 148 were in experimental group and 142 in the control group. The most commonly delivered massage technique was Swedish massage given to spine or foot for a duration ranging between 10 and 60 minutes. Meta-analysis showed a large effect for reduction of SBP by massage intervention (Hedge's 'g': -1.71, 95% CI: -4.75-3.55) with considerable heterogeneity (I2:94%, p<0.01). A moderate effect for reduction of DBP with massage intervention was found (Hedge's 'g': -0.68, 95% CI: -2.43-1.06).

Conclusion: This meta-analysis demonstrated that massage intervention could be advised for effective BP management in patients with HTN. While the literature is small and still emerging, further large prospective studies with long follow-ups are warranted to verify the findings from this meta-analysis.

MASSAGE THERAPY ASSISTS INFANT WITH NEONATAL ABSTINENCE SYNDROME: A CASE STUDY

Deborah Zerkle, LMT, Amanda Sonk, LMT, Robin Gawronski, LMT, Travis Duffey, LMT

Introduction: Neonatal Abstinence Syndrome (NAS) is caused by withdrawal from various medications infants are exposed to in utero. Opiate abuse has increased; corresponding numbers of NAS have also been reported. NAS infants experience symptoms including crying, difficulty sleeping, poor feeding, even yawning and sneezing. Infants with NAS have dysregulation of their autonomic nervous system, potentially manifesting in difficulty with self-soothing causing feeding intolerance and difficult medication administration. NICU staff may consider massage therapy (MT) to provide supportive care for this population.

Objectives: This case study attempts to investigate the impact of MT on a NAS patient and their ability to self-regulate as defined here as the ability to become organized, calm, and orally accept medication administration.

Case Presentation: Three-week-old patient admitted to the NICU with NAS. The Registered Nurse (RN) attempted to administer oral medications to the patient unsuccessfully for sixty minutes. Next steps include intravenous (IV) or nasal gastric tube (NG) placement to allow medication administration. The RN, for non-pharmacological

support, called the Licensed Massage Therapist (LMT) to bedside.

Methods: Patient presented as agitated and unable to calm. Massage therapy modalities utilized during this session included containment holds throughout the entirety of the session and Swedish MT techniques including stroking and passive touch for 60 minutes intermittently. Additionally, within this session and with RN holding patient, the LMT applied acupressure for no more than five minutes to GV 24.5 point in a circular motion. Patient calmed and accepted small amounts of medication orally. MT treatments continued in this pattern throughout medication administration.

Results: The patient demonstrated episodes of calm followed by episodes of agitation. The session length with the LMT and RN working together totaled 2 hours. By the end of the session all medication was administered and IV or NG placement was avoided.

Conclusion: Patients with NAS may benefit from MT to help calm with feeding, medication administration, and self-regulation. A collaborative approach may be utilized to implement massage therapy as a non-pharmacological intervention as standard of care for infants with NAS in the NICU.

INITIATING INPATIENT MASSAGE THERAPY AT A PEDIATRIC HOSPITAL

Robin Miccio, MS, LMT, CPMT, Tiffany Silliman Cohen, LMT, Jennifer Evans, LMT; Maria Mascarenhas, MBBS

Introduction: Research supports massage therapy (MT) is promising for acute-care pediatric patients, yet the adoption of massage into traditional medical settings is slow. In September of 2018, The Integrative Health (IH) Program at the Children's Hospital of Philadelphia (CHOP) the first massage therapist was hired as a part-time employee to pilot massage in CHOP's outpatient oncology specialty care center. Over time, interest arose at the Main Hospital and philanthropic funding allowed MT to expand to the inpatient setting in January 2021. This study assessed integrating MT into an inpatient medical setting. The process of establishing MT is also described to aid other institutions in developing similar integrative programs.

Objective: The primary objective is to determine the feasibility and acceptability of introducing MT into inpatient mainstream care by utilizing a retrospective chart review. The secondary objective is to describe the process by which the service was established and expanded including lessons learned through team discussions.

Methods: In January 2021, MT was piloted in inpatient oncology to gauge interest and determine the ideal clinical flow. Massage Therapist Scope of Service, job description, and PFEs had to be created and approved. CHOP's Information Services team helped set up mechanisms in the Electronic Medical Record (EMR) to allow doctors and nurse practitioners to refer to MT. These orders included reasons for referral, limitations and/or contraindications. Therapists were given access and training in the EMR to be able to review and document in patients' charts. The therapists created and presented evidence tables and to leadership and the department at-large before rolling out MT. This process utilized research to inform providers about the most appropriate patients to refer to MT. Educational materials, flyers, outreach to unit staff, therapist participation in unit meetings/rounds, and presence on the unit were critical in solidifying the service. Lessons learned were captured through weekly team meeting discussions. After one year, charts were reviewed to capture patient demographics and volume as a measure of feasibility and acceptability.

Results: The IH Program employed one massage therapist at the beginning of the inpatient launch, servicing oncology two days per week. By the final quarter, 1.65 full time Massage Therapists were employed; MT was offered 4 days a week serving 4 units. Providers placed referrals through the EMR, which appeared on the therapists' patient list. This list grew to an average of 20 patients per day by the third quarter, which accounted for roughly 3.7% of the hospital's average census (547) in 2021. Within the first year, 359 patients were referred to massage, and 193 patients received at least one massage. Patients were seen on average one to two times per week for between 15-30 minutes per session. Patients' average age was 3.47 + 3.44; 111 identified as female, 81 male, and 1 non-binary. Providers referred patients to MT for pain, anxiety, stress, constipation, nausea, sleep, and/or patient family request. Therapists commonly used Swedish, Reflexology, Trigger Point Therapy,

Myofascial Release, Caring Touch, and caregiver/self-massage education.

Conclusion: The growth in volume of massage consults illustrates that integrating massage therapy into a hospital setting was attainable and multiple patient populations were interested in receiving massage in the medical setting. Overall, we saw more consult orders for female patients for pain and stress. Once we established the massage service in a unit, those providers increased orders to MT as patients were reporting the benefits of massage to their care teams. The team learned the importance of building the service gradually, beginning with a subset of units and establishing a presence before expanding to another unit. Demand grew throughout the year due to quality of the services and therapists' ability to develop strong relationships with patient families and their care team (nurses, doctors, NPs, child life, physical therapists, occupational therapists, social workers and more), thus we needed to increase staffing. Challenges included lengthy regulatory processes that delayed the launch of MT inpatient. It is not only critical to identify funding, but also to identify a doctor champion who understands the institutional system and can move the service forward. The IH Medical Director served in this role and offers a weekly touch-base with massage therapists to educate them about medical processes and patient populations. Integration of MT into a pediatric inpatient hospital was feasible and acceptable. We hope this can pave the way for more institutions to establish and integrate complementary therapies into medical care.

DEEP VEIN THROMBOSIS: MASSAGE THERAPY PROTOCOLS EXPLORED IN A PEDIATRIC HOSPITAL SETTING

Corrie Frey, LMT, CIMI, CPMT, Deborah Zerkle, LMT

Introduction: Within the hospital setting, the incidence of pediatric patients diagnosed with a deep vein thrombosis (DVT) has risen over the last decade from 5.3 to 30-58 incidences per 10,000 admissions. Risk factors increase with surgery, immobility, inflammatory conditions, and central venous catheters. Three main contributors being stasis of blood flow, endothelial injury, and blood hypercoagulability. Massage therapy (MT) with patients that are diagnosed with a DVT is a controversial topic within the field. However, the presence of DVT is not an officially established contraindication for incorporating MT while a patient is admitted to the hospital.

Objective: The purpose of this abstract is to construct guidelines and protocol on how to provide MT for pediatric patients with acute or chronic DVT in the hospital setting.

Methods: A team of four Licensed Massage Therapists conducted a literature review of relevant articles. General articles about DVTs within hospitalized pediatric patients were reviewed, along with articles pertaining to blood flow, DVTs post procedure, and MT when DVTs are present. Of the articles reviewed, 10 were identified as pertinent in developing our DVT guidelines.

Results: Overall, the level of evidence in the literature was low. Contraindications were noted, which were directly correlated to massaging too deeply over the area where a DVT is located. The team used the available literature and clinical expertise to establish guidelines and constructed a decision tree. Guidelines were formulated based on the patient's presentation, hematologic disorders, ambulatory status, blood thinning medications, and DVT risk. A decision tree was constructed to guide the treating massage therapist in working with a patient with known DVT, which includes what areas on the body to avoid, according to vasculature.

Conclusion: Increased education is paramount to enhance the hospital based MTs knowledge of vasculature, DVT development, and risk of MT within the context of DVTs. Additional research is needed to validate our protocol. Of note, this protocol should only be considered to be used within a hospital or clinical setting, and not necessarily within private practice.

PRESSURE LEVELS OF MASSAGE AFFECT PAIN AND ANXIETY OF PATIENTS WITH CANCER: A RETROSPECTIVE REVIEW

Jill S. Cole, MA, LMT, BCTMB, Carolyn Jauco-Trott, MPH, LMT; Marilyn E. Burke, LMT; Hailey B. W. Gallivan, MA, LMT; Sabrina V. Brown, DPH; Stacey A. Slone, MS; Esther E. Dupont-Versteegden, PhD

Introduction: Consideration of pressure levels is important for the safe delivery of oncology massage. The effect of different pressure levels of massage therapy on pain and anxiety in patients with cancer, are understudied.

Objective: The objective of this study is to identify differences in massage therapy pressure levels on pain and anxiety in patients with cancer.

Methods: A retrospective chart review of 177 adult patients with cancer was performed. Massage therapy was given to patients for 15 minutes, during their chemotherapy-infusion treatments or hospital stay at an academic medical center, using the Walton Massage Therapy Pressure Scale. Walton Pressure 1 (PR1) indicates the lightest pressure, skin movement only, Pressure 2 (PR2) indicates slight movement of muscle, and PR3 is PR1 and PR2 combined. Pain and anxiety were measured using a visual analog scale, before and after intervention. Data are presented as medians and nonparametric tests were used to identify differences. Statistical significance was set at $p<0.05$.

Results: Complete data sets were collected on 85 patients. Pain and anxiety improvement (pre-post) and percent change (pre-post/pre) were calculated and all outcomes were significantly different from no change, ($p < 0.0001$). Pain improvement ($p=0.0062$) and percent change ($p=0.0042$) were significantly different between the 3 pressure types with P1 and P2 being higher than P3. No differences were observed between pressure levels for anxiety improvement and percent change ($p=0.81$ and $p=0.60$, respectively).

Conclusion: One single session of massage therapy decreased pain and anxiety in patients with cancer. PR1, the lightest pressure, yielded the biggest change in pain improvement and percent change, but not anxiety. Anxiety decreased no matter the pressure level. These results indicate that massage is a potentially beneficial nonpharmacological treatment in patients suffering pain after cancer treatment and that pain and anxiety respond differently to pressure levels.

MASSAGE THERAPY AND SPINAL CORD INJURY IN A CERVICAL COLLAR: A CASE STUDY

Bethany Contini, LMT

Introduction: Approximately 1,455 children are admitted to hospitals for spinal cord injuries (SCI) annually in the United States. This patient population may have symptoms of anxiety, sleep disturbances, pain (local, general, or neuropathic), and an increase in muscle tension. Massage Therapy is utilized for SCI patients from the Intensive Care Unit (ICU) to the Rehabilitation unit as part of a multidisciplinary team.

Objective: This case study is able to highlight how Massage Therapy can assist a patient with a SCI in a cervical collar through the Rehabilitation process, by reducing pain and easing anxiety.

Case Presentation: A 14 year-old with a SCI at C5, involving C5 corpectomy (removal of damaged vertebrae) as well as anterior and posterior cervical fusion resulting in need of a cervical collar. The injury caused tetraplegia, an impairment of sensory and motor function in the upper and lower extremities, as well as the trunk and pelvic organs. The patient reported neuropathic pain in all extremities, significant pain in right, posterior shoulder, and knee, and increased anxiety since the accident.

Methods: A physician order was placed for the patient to receive Massage Therapy for pain management and anxiety concerns. With approval from the physician team, the Licensed Massage Therapist (LMT) provided therapy directly under the cervical collar and the surrounding tissue for pain and muscle tension relief. The LMT addressed pain caused by the injury, specifically affecting the brachial plexus including muscles in neck, shoulders, bilateral upper extremities, and chest by applying myofascial release and Swedish techniques during each session. The therapist noted when the patient verbally reported pain at the beginning of the session and no pain at the end of the session. The LMT also addressed pain, anxiety and muscle tension through palpation and non-verbal indicators such as eyes wide open and increased heart rate. The patient received Massage Therapy for 30 minutes, 5 times a week, for a total of 29 sessions.

Results: Out of 29 sessions: The patient reported pain in the beginning of the session and no pain at the end 26 times (89.7%),

the patient fell asleep 3 times (10.34%), and reported no pain at the beginning or the end of the session 1 time (0.03%).

Conclusion: MT was successful in the ability to reduce pain, muscle tension, and anxiety in this pediatric patient following SCI. Using MT may increase patient participation in other therapies, as pain and muscle tension may be reduced, for further study. Further research is also warranted to discuss the benefits of MT for this patient population along with the use of MT while patients are in a cervical collar.

MT A NON-PHARMACOLOGICAL SUPPORT FOR INFANTS WITH NEONATAL ABSTINENCE SYNDROME: A CASE SERIES

Robin Gawronski, LMT, CIMI, CLT, Deborah Zerkle, LMT

Introduction: Neonatal abstinence syndrome (NAS) is a result of opioid exposure in the womb and occurs in 6 out of 1000 live births, although cases are rising. Infants with NAS experience disturbances in neurologic, autonomic, gastrointestinal, and musculoskeletal system functions causing disruptions in feeding and developmentally appropriate sleep. Medical staff score NAS patients by the Eat, Sleep, Console (ESC) methods, which relies on a structured assessment of feeding, sleep duration between feedings and the ability to be consoled. ESC method includes both pharmacological and non-pharmacological interventions to support patients during opioid weaning in the neonatal intensive care unit (NICU). Infants can benefit from massage therapy (MT) by weight gain, better feeding tolerance, and self-soothing.

Objective: This retrospective case series highlights how massage therapy (MT) can be used as a non-pharmacological intervention to console NAS patients, which helps the patient transition into developmentally appropriate self-soothing, regulation, and sleep.

Methods: The retrospective case series included 6 NAS patients ages 1 to 29 days old that received MT while admitted. A total of 14 treatments were provided for all six patients receiving 1 to 3 treatments each with an average of 42 minutes each session lasting anywhere from 30 minutes to 100 minutes in duration. At the beginning of 12 MT treatments, patients presented as crying and dysregulated, 1 presented as calm, and 1 presented as restless. All patients were swaddled as per normal practice in the NICU. The Licensed Massage Therapist provided Swedish massage techniques, including hand containment, passive touch, Myofascial, and gentle stroking. Consent for this was a retrospective chart review case study was inferred as parents/guardians sign informed general consent at admission, MTs work directly from a doctor's order, and patients were cleared for MT prior to treatment by the bedside RN.

Results: Of the 14 therapy treatments, 93% of the patients were able to transition from crying or calm to sleeping, while 7% went from restless to calm.

Conclusion: As the focus of NAS patient care moves to the ESC method, MT may be a non-pharmacological option to support these infants during admission. Although MT results were positive, more research is needed to identify if the intervention lowered medication needs of the infants as this was not studied in this retrospective case series. In addition, investigation on the timing for MT to be the most advantageous in application, such as before or after feeding, is warranted.

LONG COVID SYNDROME AND MASSAGE THERAPY: WHAT THE SYMPTOMS CAN TEACH US ABOUT MANAGEMENT

Elias Wheibe, Benjamin H. Dalkin and Rebecca Russ-Sellers, PhD, Jennifer Grier, PhD

Introduction: Long COVID Syndrome is a chronic complication of COVID-19. It has been defined as persistent or novel symptoms that occur following an acute Severe Acute Respiratory Coronavirus 2 (SARS-CoV-2) infection. Long COVID Syndrome affects around 30% of patients and may last from weeks to months. Current medical care for patients with Long COVID Syndrome is reliant on symptomatic management that results in limited minor improvement in quality of life.

Objective: We aimed to describe the systemic impacts of Long COVID Syndrome and couple these results with previously reported benefits of massage therapy to demonstrate that therapeutic massage therapy techniques could serve as an additional course of treatment for patients suffering from Long COVID Syndrome.

Methods: Using a systematic review conducted by the authors of 17 cohort studies which characterized the symptomology of long COVID Syndrome between January 2020 and April 2020 across the world, we created a repository of central symptoms experienced by patients. Using that data, we highlight different treatment options that employ massage therapy techniques in relation to each organ system, particularly techniques that have demonstrated clinical improvements in other various diseased states.

Results: We identified the pulmonary and central organ systems to be most affected in Long COVID Syndrome, with PTSD, fatigue, dyspnea, cough, and sleep disturbances as the most common symptoms. These symptoms could be eased for some patients through therapeutic massage care.

Conclusions: Understanding that medical therapy is not the only solution and helping these patients, we highlight easy massage therapy techniques that have had a positive impact on health for use in the treatment of patients experiencing Long COVID Syndrome. Moving forward, clinical research needs to be done to confirm these ideas and suggest alternative treatments for patients struggling with Long COVID Syndrome.