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Case Study

DESENSITISATION THERAPY IN POST STROKE PAIN SYNDROME: A CASE STUDY

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ABSTRACT

A rare disorder in post stroke patients is "Dejerine Roussy syndrome" or " Thalamic pain syndrome " that is broadly defined as the stroke causing damage to the thalamus. Most commonly affects one hemisphere of brain and leads to lack of sensation on contra lateral side of the body . Thalamic pain syndrome has eponyms as" Central Post Pain Syndrome , Thalamic Hypersthetic Anaesthesia, Central Pain Syndrome" . It was found in 1906 and entitled as "De Syndrome Thalami Qui". Thalamic pain syndrome is characterized by numbness on the affected side which is replaced by burning & tingling sensations. These are accompanied by abnormal sensation of touch which refers to pain . It is a form of neuropathic pain often occur in combination of itching , burning , & tingling sensations in response to stimuli . Following is a case of 40 yr old female presenting with wide spread of pain over half of the body attributed to thalamic pain syndrome . Discussion of the characteristics of neuropathic pain and testing techniques by using sensory examination of Fugl Meyer Assessment Scale (FMA) and Nottingham Sensory Assessment (NSA) were described in detail.

KEY WORDS: Thalamic Pain Syndrome , Desensitization, Sensory Re-Education.

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INTRODUCTION

Central post stroke pain syndrome (CPSP) is more challenging to physiotherapy when problem is chronic among the stroke. "central post-stroke pain" (CPSP) can be defined as the central pain that may occur as stroke to the thalamus which mediates the pain as a sequela .Pain is common after stroke to the thalamus because thalamus is the relay station of all the pathways in the central nervous system[1]. The incidence of thalamic pain syndrome is very less among the population only 14% to 43% of people with this syndrome comes under acute and subacute categeory. CPSP occurs 8% of ischemic stroke and 9% of thalamic hemorrhage[1,2]. Normally pain in other types of stroke can be easily treated acutely with physical therapy and medication. CPSP is a variety of neuropathic pain and is originated in the higher centers of the brain. It is difficult to diagnose CPSP, and it is often confused with other painful conditions. Very few cases of CPSP will present at the early stages of acute stroke, but 63% develops pain within a month after stroke[3]. The pathophysiology of CPSP has been unknown as it changes and many number of mechanisms had been developed to describe the pathophysiology patterns[4]. CPSP is characterized by constant

or intermittent pain and associated with motor deficits and sensory abnormalities. Pain is one manifestation of the syndrome, which causes notorious changes in the sensation of the body. The pharmacological interventions for CPSP is only part of a comprehensive pain management program, physical therapy is also included for exercise and counseling of the patient to recover from the physical problems that are faced during activities of daily living.[5,6]

CASE REPORT

A 42 year old female referred by neurologist presented with chronic pain of total right half of the body since 2014. She also complained of numbness and tingling sensation.

Past history: She had first stroke during her first pregnancy which lasted for about 15min. After that, she had a episode of Stroke in 2014, and admitted in hospital with complaints of sudden weakness of right side of the body and slurred speech. During that episode she developed pain over the right side half of the body. At the time of admission in 2014 patient was conscious but disoriented for few days. All the investigation reports shows that chronic infract in thalamus on left side, and had weakness on the total right side half of the body. From the onset , she had pain and burning sensation over the right side half the body. She was under physiotherapy for about 3 yrs with a conventional exercise protocol includes stretching, strengthening and functional task training. She had hypertension from past 10 years and on regular medication Tab. Nicardia 20mg and also had type 2 diabetes from past 1 ½ year and on regular medication of Tab. Glycomet GP2 forte. She again admitted in nearby her home hospital for profuse sweating for about 1 week in 2016. She was there for about 10 days. After that she recovered the paralysis of right half the body & later she had sensory loss and hyperesthesia where the pain was severe and unrelenting and had less duration of pain free episodes.

Physical therapy examination: On examination of higher mental status, patient was conscious, oriented, comprehending. Memory recall was intact. She was able to organize and relate her symptoms without any signs of disorientation.On motor examination, voluntary control of the patient is in grade 4 in Brunnstrom grading in which movements are out of synergy. The patient was able to perform movements like hand behind back, shoulder adducted, elbow flexed, forearm supination and pronation and arm held in 90^0. Upper limb reflexes are normal and symmetrical.

On musculoskeletal examination, she relates the pain radiated to all the fingers of right hand and also to all over the lower extremity and motor strength was normal.

On sensory examination body segments were analysed with light touch, pressure, pin prick and temperature. Temperature was perceived as pain sensation in the region being tested in the upper and lower extremities. Even a light touch induced an exaggerated amount of pain i.e., hyperesthesia on right side of the body. The body segments of hyperesthesia areas were right side of face, right upper limb and lower limb. Pain sensation was assessed by placing pin perpendicular to the upper arm, where the patient felt sharpness of pain sensation all over the limb which persisted over a minute. The attitude of the extremities in response to noxious stimulus was finger and wrist flexion, flexion of hip , knee & inversion of foot .

By the features of thalamic pain is characterised by observing the case as follows: Hyper sensitivity to light touch, cold, Loss of proprioception only in distal joints of upper and lower extremities, Loss of stereognosis, Severe persistent intolerable pain on right half of the body.

Intervention:

Most of the neuropathic pain responds poorly to NSAIDS and opoid analgesics. Recently post stroke pain is treated with deep brain stimulation (DBS) on various trials for neuropathic pain [1, 3]. A recent review assessed that thalamic pain subjects received both type of TENS treatment i.e., high frequency and low frequency for about 16 days . They showed the results of pain reduction and improvement of symptoms [7-15].

In such cases physical therapist plays a role in diagnosing the discomfort and provide further relief of pain according to the symptoms and dysfunction. Most of the previous studies viewed that sensory rehabilitation is given by using thermal intervention , sensory re-education,

sensori mo-tor training. The physical therapy intervention for Thalamic pain syndrome is desensitisation treatment [14].

The protocol followed for this patient is a total duration of the treatment is 3 sessions in a week for consecutive 2 months , the treatment protocol includes as following techniques:

Tactile desensitisation given with cotton balls progressed to raw materials for about 2 sessions in a week . Self administered tactile desensitisation for 10 sessions for 2 months progressed from cotton balls to towel and hard surfaces.

Pressure desensitisation given by rolling balls firmly on the affected side for about 3min of exposure to 2min rest and again 3min exposure , for about 10 sessions in 2months.

Proprioception desensitisation given by positioning the affected limb in a position and asked the patient to explain in what position is in arm with closure of eyes.

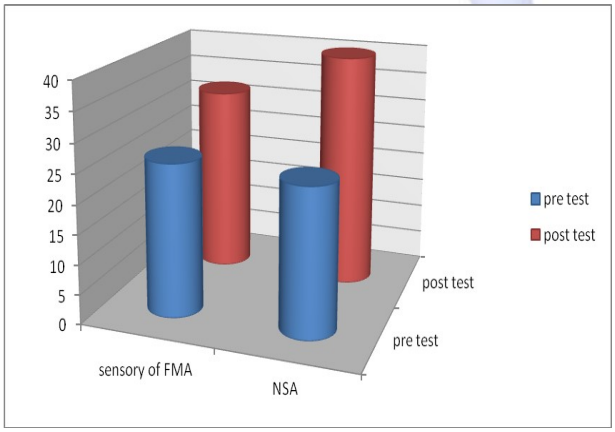
Stereognosis was treated with closure of eyes by different objects placed in hand and asked to identify the object.

Outcome measures: Sensory examination of component of Fugl Meyer assessment scale Nottingham sensory assessment scale

RESULTS

The desensitization therapy showed a significant improvement difference in pain sensation which is felt on over the right half side of the body when compared to the pre test with percentage of 40% of sensitivity had been improved.

Fig. 1: Shows the pre test and post test results of the sensory of FMA and nottigham sensory assessment (NSA) after 2months of the intervention.



DISCUSSION

The patient described here was affected by thalamic pain syndrome , after a stroke in the left hemisphere. The patient suffered from an intolerable pain in the contralateral body and impairments of motor activities. There is an impairment of sensation which is felt as pain on the contralateral side of the body. The pathophysiology of the thalamic pain syndrome is not clarified and many mechanisms have explained their own way of the pathways of thalamic pain syndrome. According to the thermosensory disinhibition hypothesis thalamic pain syndrome is the thermoregulatory disorder which occurs loss of inhibition of pain[18]. This is a very rare phenomenon, according to our knowledge, there is only one case suffering from pain followed by thalamic stroke among the types of stroke.

A recent decades of studies states that this type of sensations are treated by non invasive physical modalities in physiotherapy. These reduce the pain and induce neuro modulatory effects for motor deficits. These non invasive modalities such as TENS, which have no side effects and easy to operate and inexpensive[17].

However the current stream of treatment for thalamic pain syndrome is by pharmacological interventions , deep brain stimulation , boutlinum toxin , motor cortex stimulation, transcranial magnetic stimulation and caloric vestibular stimulation. All these therapies are done either by surgical or under observation of physician[15].

In this case study the desensitization therapy results in the significant improvement in the sensation on the right half side of the body. These techniques improved the pain reduction in the upper limb and lower limb. Tactile sensation had been improved by using different textures of the fabric, where as pressure sensation has been improved after the intervention by using balls rolling on the skin[12]. At baseline stereognosis sensation has been felt as pain sensation , after 2 months of interventions the patient is able to differentiate the objects with mild pain sensation. The results showed that significant improvement in the pain reduction and improved in the motor activities on the right half side of the body.

CONCLUSION

The study concludes that the sensory deficit is corrected by desensitization therapy in thalamic pain syndrome patients by using different techniques and the results showed an improvement in the reduction of pain all over the half side of the body and improved in sensation.

Futher recommendations: Sensory reeducation can be started at early stages of the Brunnstrom grading 2. More studies can be done in physical therapy management for thalamic syndrome for reduction of pain and improving sensation.

Conflicts of interest: None

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