



OCCUPATIONAL THERAPY REHABILITATION FOR PATIENT WITH HAEMOPHILIA FACTOR13 DEFICIENCY WITH RECURRENT STROKE DURING COVID19 PANDEMIC: A SINGLE CASE REPORT

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ABSTRACT Reaching to rehabilitation centers for therapy in COVID19 pandemic condition has been challenging. This case report narrates rehabilitation of a patient with haemophilia factor13 deficiency with recurrent stroke during this pandemic. In such cases there is great necessity for treatment and therapy; however this patient was unwilling to visit hospital frequently because of fear of contracting COVID infection and being from low socioeconomic background could not afford cost of travelling and engaging his father (sole earning member in family) for assistance in outdoor mobility. Hence patient was provided with OT therapy via teletherapy and less frequent visits to the department. Our aim was to examine effectiveness of OT intervention delivery on OPD basis and at home via teletherapy. Patient was assessed on MOCA scale, RBMT, OTAPST, and CBS. He received 4 months intervention once in a week at OPD & thrice a week home exercises programs via teletherapy. **CONCLUSION** OT Intervention in hospital setup and home based therapy via teletherapy resulted in significant improvements in motor and cognitive function which helped him to regain independence in ADL.

KEYWORDS : Covid19, Factor 13 deficiency, Haemophilia, Occupational therapy, Stroke

INTRODUCTION:

Factor XIII is a clotting factor which plays an important role in hemostasis by catalyzing the cross-linking of fibrin, platelet membrane, and matrix proteins throughout the formation of thrombus and, consequently, stabilizes the formation of blood clot^[1]. Factor XIII deficiency is a rare, genetic bleeding disorder. The risk of intracranial hemorrhage is greater in factor XIII deficiency than in other related bleeding disorders^[4]. The main cause of death or disability in these patients is intracranial hemorrhage which may occur spontaneously or after minor trauma. Cryotherapy or factor supplement and occupational therapy intervention are the optimal first line treatment plan for hemophilic patient with intracranial bleed.

Rehabilitation is usually provided by healthcare professionals in a hospital or clinic setting. The covid19 pandemic has made stroke care even more challenging. The ability of patients to avail the rehabilitation services is impaired due to fear of COVID infection, travelling expenses, and early discharge from the hospital to shortens or eliminates risk of exposure. Telerehabilitation, by virtue of minimizing travel and reducing physical contact provides a pragmatic advantage by avoiding in person consultation. Telerehabilitation is defined as delivering rehabilitation services via communication technologies. Teletherapy in this current COVID-19 pandemic has become the primary way to deliver care.

OBJECTIVES:

To assess effectiveness of occupational therapy intervention during COVID19 pandemic for patient with haemophilia factor13 deficiency with right hemiparesis.

STUDY DESIGN: A case study

CASE REPORT: this case looks at a 28 year old male patient, left dominant, who is a known case of haemophilia FXIII deficiency with recurrent stroke. He was working in mobile and computer repair shop before the recent stroke. Past history of left hemiplegia in 2011, CT scan of brain showed right frontoparietal bleed and also he had history of 5 episodes of focal seizures episodes in 2011. There was another brain bleed incidence in 2016, MRI of brain showed acute infarct in the cerebral parenchyma. He also had history of road traffic accident in 2018, where he underwent surgery for internal fixation and plating of right Intertrochanteric neck femur fracture. Now recently he met with blunt trauma to head in July 2020 which led to SAH in bilateral parietal lobe with intraparenchymal bleed in left temporoparietal lobe. On arrival in hospital he was found to be unconscious for 2 hours and GCS scored 9 suggesting moderate brain injury. He was hospitalised for 15 days, on discharge he was advised to take Cryotherapy once in a week for 3 months and OT intervention.

MATERIALS AND METHODS:

Patient was assessed on 19/10/2020 using standardized screening scale: occupational therapy adult perceptual screening test, Montreal cognitive assessment scale. Outcomes measures scales are: FIM scale,

RBMT, CBS. Patient received OT intervention once in a week at outpatient department set up and thrice a week home exercises programs through teletherapy.

CLINICAL FINDINGS:

He presented with right hemiparesis with old stroke residual weakness in left extremities on 19th October 2020. The following were the result of laboratory tests: prothrombin time 15.6secs, activated partial thromboplastin time 19.0 secs, thrombin time 11.3 secs, Hepatitis B positive. His physical examination revealed fair voluntary control [Brunstrom stage 5 in upper and lower limbs, stage 4 in right hand], right extremity muscles strength were grade 3 and left extremity muscles strength were grade 3+, poor in maintaining of balance during functional movements, hand function were poor [right > left hand], bilateral ankle plantar flexion contracture were present [left > right], and showed gait difficulty. On neurological examination he had homonymous hemianopia, moderate memory loss with decline in cognitive function. We performed following standardized scale:

- **OTAPST**
- **Visuospatial relation:** right side neglected.
- **Acalculia:** difficulty in 2-3 digits subtraction.
- **Functional skills** affected in reading, calculation.
- **Naming the common objects:** Patient knows the function of objects but difficulty in finding words
- **Time line:** pre intervention evaluation done on 19th October 2020
Post intervention evaluation done on 25th February 2020. Table no.1

SCALES	PRE INTERVENTION	POST INTERVENTION
FIM	Total score - 91/126 Motor items- 72/98 cognitive items- 19/28	Total- 105/126 Motor items-79/98 Cognitive items-26/28
MOCA	17/30 Name the animals: affected 0/3 Attention: affected Memory: recent, recent past affected.	23/30 Name the animals: able to name out 2/3 Attention: mildly affected Memory: recent, recent past improved.
RBMT	Total score 6/12 Immediate and delayed memory severely impaired	Total score 10/12 Delayed memory mildly impaired
CBS	30 Moderate burden	20 Mild burden

Figure table no. 1 source- original

THERAPEUTIC INTERVENTION:

- Neuro-Developmental techniques used in this patient are scooting, sit to stand, squat pivot transfer, weight shifting and gait training.
- Patient taught transfer training and functional mobility skills using NDT and Upper & lower D1 flexion & extension PNF pattern. Bilateral symmetrical D1 extension performed while pushing off

the chair to stand. Bilateral symmetrical D2 flexion: reaching to lift a large item from the height.

- Pilates mat exercises level 1: imprinting, one leg stretch, clam, hip twist, spine twist, one leg circle exercises given.
- Balance training: static and dynamic balance training-sit to stand, one leg standing for 20-30 secs, spot marching for 30 counts, on toe standing, mini squats, reaching forward with clasped hands, leaning down on elbow, reaching activities toward weak side.
- Fine motor activities- hand muscles strengthening exercises using therapy, clothes & paper pins. Occupation based simulated activities.
- Patient practiced gait components in preparation for walking, which includes symmetrical weight bearing training, stepping training, single leg standing. Patient made walks with walker with proprioceptive cues and gradually progressed to verbal cues for correcting abnormal pattern. Stairs climbing training- practised with set up and set down and stairs climbing with rails support.
- Vision therapy: Eye tracking movement. He has been practiced reading and scanning target words in a paragraph. Red line is marked at the end of sentence. He has been instructed to read the sentence till red mark appeared. Connect the dots.
- Cognitive rehabilitation: Remedial approach applied in this patient to improve semantic memory- repeated rehearsal of common objects naming out via teletherapy [fig no.2A]. Repetition combined with a multi modal approach involving naming and rich descriptions of objects and associative memory game.
- To improve attention and concentration difference between two pictures, counting specific colours from given pictures, cancellation of target word.
- To improve delayed memory: Patient has been asked to drop a message to therapist on given specific time, Cancellation of targeted words in a news article paragraph.
- For word finding difficulties provided one word and asked patient to identify a related word or a word with the same meaning. Listing words starting with specific letters.
- Home exercise programme: Done under parent's supervision via teletherapy. Home environment modification- advised non skid mat and grab bars in bathroom and toilet.
- Patient was provided with all the above mentioned protocol at OPD & home exercise programme done via teletherapy.

A

B

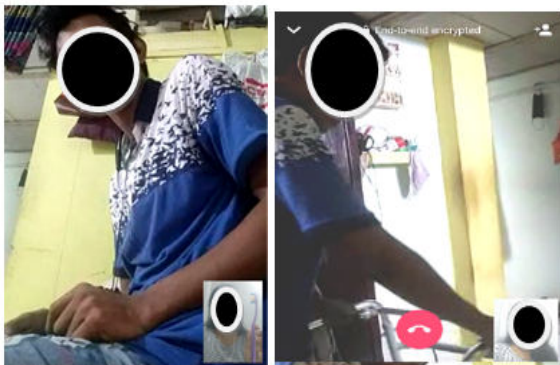


Fig. 2. Home exercise programs Using teletherapy A] Training for identification of brush. B] Gait training

RESULT: The results showed improvement in level of independence, cognition skills after occupational therapy intervention and decreased in caregiver burden [table no.1]

DISCUSSION

A 28 year old male haemophilic patient, left dominant, presented with motor deficits, anomic aphasia, cognitive function decline and homonymous hemianopia. IC bleed in haemophilic patient is highly dangerous and requires immediate attention. This patient was unwilling to visit hospital for therapy, who would otherwise have limited or no access to therapy in his first 6 months of post stroke. This case report provided timely early intervention for haemophilic patient with IC bleed in form of teletherapy and minimal hospital visits during covid19 pandemic. Recent literature reviewed various trials of teletherapy for patients with aphasia in aspects of assessment and treatment. Most studies were conducted in the patient's own home environment with mobile based videoconferencing, message chats systems^[8,9]. This patient received various benefits in his emergency care period using technology of telehealth, minimal hospital visits

during covid19 pandemic. Interventions are directed towards developing, improving, restoring daily living skills, work readiness, and return to work; these helps in enhancing his quality of life. Patient showed significant improvement in motor, cognitive function and helped him in day to day functioning independently [FIM scored 91 to 105, RBMT 6 TO 12, and decreased in caregiver burden from 30 to 20]. The patient's caregiver greatly appreciated the OT services delivered to them, as they were unable to visits hospital regularly for therapy sessions. Recent literatures showed various trials of teletherapy for patients with aphasia in aspects of assessment and treatment and provide moderate evidence as conventional rehabilitation in improving ADL abilities and motor function for stroke survivors.^[9] Most studies were conducted in the patient's own home environment with mobile based videoconferencing, message chats systems.

CONCLUSION:

OT Intervention in hospital setup with home based therapy via teletherapy resulted in significant improvements in motor and cognitive function which helped him to regain significantly independence in ADL and better quality of life.

ABBREVIATION:

MOCA- Montreal cognitive assessment scale, RBMT- Rivermead behavioural memory test, OTAPST- occupational therapy adult perceptual screening test, CBS- caregiver burden scale.

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