

The role of occupational therapy in rehabilitating stroke patients

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ABSTRACT: The role of the occupational therapist is outlined. An overview of occupational therapy evaluation and treatment is discussed. The goal of rehabilitation is aimed at helping the patient achieve the highest level of independence of which he is physically capable. A case report is presented.

KEY WORDS: occupational therapy, CVA, visual motor perception

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This paper presents the occupational therapy philosophy, goals and evaluation procedures used with stroke patients. Rehabilitation of stroke patients requires that the occupational therapist, with other rehabilitative team members, i.e., the optometrist, physician, physical therapist, speech pathologist, etc., help the patient achieve the highest level of independence of which he or she is physically capable. Following cerebral vascular accidents, patients are often left with some degree of visual, perceptual and/or cognitive dysfunction as well as varying degrees of paralysis and/or weakness and sensory loss.¹

Evaluation

Before treatment begins, the occupational therapist performs several evaluation procedures. Results of the tests are used to establish the patient's initial clinical picture, to plan his treatment program, to determine progress, and to make changes in treatment when indicated. The following tests are given to establish an occupational therapy program:²⁻⁴

Evaluation of the hemiplegic upper extremity

Passive joint range of motion This test measures patient's passive range of motion which provides objective record of joint contracture. This test is performed using a goniometer. Joint limitation adversely affects the function of the extremity and subsequently the patient's potential for achieving independence with self care activities.⁵ For example, a shoulder contracture less than 90 will cause the patient difficulty putting on a shirt.

Motor and abnormal tone testing Evaluation of upper extremity motor control involves an analysis of the degree of spasticity as well as the type of voluntary motion that is present.⁶ Following a stroke, the patient may have flaccid paralysis, patterned motion or selective motor control.

If the patient demonstrates selective motion, a standardized manual muscle test is performed. A standardized manual muscle test is used to determine the degree of muscular weakness resulting from disease, injury or disuse.⁷ The patient with selective muscular control of his upper extremity may have impaired coordination. Gross and fine coordination are evaluated through observation.

Gross sensory test This test discloses impaired areas of tactile sense, proprioception and stereognosis. It guides the occupational therapist in training the patient to be aware of desensitized and impaired areas so the patient can protect himself from injury and substitute vision for any sensory loss.

Activities of daily living evaluation This test establishes the patient's level of function. It identifies areas that require training to increase the patient's functional performance. It includes the following areas: feeding, hygiene, dressing, bathing, and transferring.

Cognitive assessment This test reveals impaired areas of understanding, awareness, judgment, decision making, attention span, and memory. The patient's cognitive level is determined through informal questioning based on the profession's body of knowledge.

Visual motor perceptual tests These tests reveal areas of visual motor perceptual impairment and indicate which visual motor perceptual abilities need training. Observing the patient performing functional tasks or purposeful movements is a useful method to evaluate visual perceptual deficits.⁶ Visual motor perceptual deficits can be tested by a series of assessments developed and described by Seiv, Freishtat and Zoltan.⁹

Another useful measure in evaluating the patient's visual motor perceptual performance is the Marianne Frostig's Developmental Test of Visual Perception.¹⁰ This is a standardized test for children and measures five visual perceptual abilities which are as follows:¹¹

1. Visual motor coordination. The coordination of vision with movements of the body or with movements of part or parts of the body.
2. Perception of position in space. This is a perception of the relationship of an object to the observer and develops out of a knowledge of the body itself.
3. Perception of spatial relations. This is described as the ability of an observer to perceive the position of two or more objects in relation to himself and in relation to each other.
4. Perceptual constancy. This is the ability to perceive an object as possessing invariant properties such as shape, position and size in spite of variability of their presentation.
5. Figure ground perception. The ability of an observer to select and attend to one set of stimuli while keeping the majority of stimuli in the dimly perceived ground.
6. Vision. Although the occupational therapist does not perform extensive eye examinations,¹² a test is used to determine if the patient has a visual field defect. The therapist sits at arm's length directly facing the patient. The patient is instructed to focus on the therapist's nose. Using the index fingers of both hands approximately 8 inches in front of the patient's face, the therapist moves one or two fingers at a time. The patient is asked to indicate which finger he sees moving.¹³

Homonymous hemianopsia frequently occurs after a stroke.¹⁴ This impedes the patient's ability to see objects on the affected side. In order to compensate for this loss, the occupational therapist instructs the patient to rotate his head to that side.

It is the optometrist who is uniquely qualified to

diagnose and treat the visual functional deficits of the stroke patient.¹⁵

Many stroke patients usually wear glasses to correct visual dysfunction particularly when performing fine motor tasks with their hands.¹⁶ The occupational therapist can ensure that such a patient wears his glasses during therapy.

It is important that the occupational therapist communicate with the optometrist in order to fully understand the impact of the patient's functional visual system disorders during occupational therapy testing and treatment. Often, optometric vision therapy and occupational therapy are integrated so that the patient's treatment plan is efficient and goal oriented. For example, while the optometrist is enhancing the patient's ocular motility, the occupational therapist develops grapho-motor and visual-motor integration ability.

Although the focus is on the affected side, in order to fully evaluate the stroke patient, the occupational therapist uses standardized tests, such as the manual muscle test, range of motion and sensory test for tactile sense, proprioception and stereognosis, to assess the non-hemiplegic upper extremity.

Goals

There are common goals that apply to most stroke patients. The goals depend on the patient's age and prognosis. At Northport, the goals are to prevent or correct contractural deformities, to increase control of motion, and to develop maximum independence in self care. Each of these goals is discussed.

Prevent contractural deformities When the patient is on an active treatment program, range of motion of the affected upper extremity is accomplished by the occupational therapist. If the range is restricted, the therapist works to increase it through performing range of motion exercises. The primary goal of the occupational therapist is to obtain and maintain a functional pain-free range of motion in the affected upper extremity.¹⁷

Increase control of motion The occupational therapist uses a variety of techniques to develop the patient's voluntary control of his affected upper extremity. Proximal control is essential for stability of the shoulder joint during skilled motor performance. Treatment begins with scapular and shoulder control and moves distally to the elbow, forearm, wrist, and hand.¹⁸ Bilateral exercises may be used to facilitate an active response of the affected upper extremity.

If the shoulder and hand function satisfactorily, the therapist incorporates the affected hand in purposeful activities. This reinforces to the patient that his affected hand is useful.

Develop maximum independence in self care Training in functional activities begins as soon as the phy-

sician refers the patient to occupational therapy. A beginning is made with light activities such as feeding and grooming, progressing to dressing, transferring from wheelchair to bed and wheelchair propulsion.

Initially, these activities are difficult and frustrating to the patient, however, continued practice increases skill and decreases the time needed to accomplish the task.

After the patient is evaluated, the occupational therapist orders any needed bathroom safety equipment such as a toilet versaframe, transfer tub bench, and grab bars. While hospitalized, the patient uses departmental equipment to start training and practice in self-care skills.

Treatment

A treatment program is initiated as soon as the stroke patient is adequately evaluated. The occupational therapist utilizes many modalities when treating stroke patients (Table 1).

The occupational therapist is qualified to treat visual motor perceptual impairments. It has been recognized in the literature that severe disturbances in visual perception can interfere with activities of daily living.¹⁹⁻²¹ The overall objective of treatment is to help the patient achieve the highest level of function.

The optometrist and occupational therapist work together on visual motor perceptual deficits. For example, many patients have low vision. Following a functional evaluation, the occupational therapist prescribes low vision devices to help the patient function at home.

A case report

A 65-year-old patient was seen at the VA Medical Center Occupational Therapy Department on 3/30/90. He suffered a stroke with left hemiparesis postoperatively following a heart transplant 12/20/89 at a different facility. The patient's chief complaints were left-sided weakness and assistance required for dressing, washing, and shower transfers.

It was observed during treatment that this patient neglected to use his left hand. He would use it if verbally cued to perform an activity, such as a peg board. During a self-care assessment, the patient appeared unable to tell the front from the back of his clothing or distinguish the right side of a garment from the left.

In view of these difficulties, the Marianne Frostig's Developmental Task of Visual Perception was administered. It revealed severe visual motor perceptual deficits in figure ground, form constancy and spatial relations.

Optometric testing revealed he had left visual neglect, left homonymous hemianopsia, convergence in-

Table 1: Occupational therapy treatment areas and modalities

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| A. Range of motion exercises |
| 1. Self range of motion exercises |
| 2. Passive range of motion exercises |
| 3. Active-assistive range of motion exercises |
| B. Muscle re-education exercises |
| 1. Biofeedback |
| 2. Vibration |
| C. Activities of daily living |
| 1. Grooming |
| 2. Feeding |
| 3. Dressing |
| 4. Transfers |
| 5. Wheelchair propulsion |
| D. Visual perception |
| 1. Visual skills exercises |
| 2. Body image exercises |
| 3. Spatial relations exercises |
| E. Therapeutic adaption |
| 1. Handsplints |
| 2. Armlings |
| F. Adaptive equipment |
| 1. Bathroom safety equipment |

sufficiency with inability to sustain near centered close work, inaccurate eye tracking, impaired visual discrimination involving spatial relations and figure ground difficulties with sequential visual memory and glaucoma. The patient was referred for visual therapy.

Information from the optometric evaluation was utilized in the patient's occupational therapy treatment. For example, knowing the patient's left visual field loss, the therapist instructed the patient and his wife how to compensate for this deficit.

During his occupational therapy, treatment focused on specific retraining of dressing skills. Marianne Frostig visual motor perceptual exercises and peg board designs were also included. In addition, the patient performed left upper extremity exercises to enhance his strength. The patient was instructed to use his left hand while performing activities.

During his self-care training, the amount of assistance and verbal cues during dressing training was decreased according to the patient's performance. The patient's wife was informed of the patient's visual motor perceptual impairments. She was instructed how to continue dressing training at home.

Following 5 months of therapy, he dresses himself with occasional verbal cues, washes himself and performs shower transfers with supervision. He was issued shower safety equipment with instructions for its use.

Summary

The philosophy and goals applied to stroke patients at VAMC, Northport have been presented. The optome-

trist and occupational therapist share common goals. Rehabilitation is aimed at helping the patient achieve his highest functional level. The patient is treated holistically. The goals of occupational therapy require the patient function with an efficient visual performance, which is enhanced through optometry. ■

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