Cerebral palsy (CP) is known since 1827 following the scientific study by Cazauvielh and the French scientist Delpech. However, it was John Little, an English orthopedic surgeon, who had equinus deformity due to polio, brought this disorder into light. He studied its causes and related them to parturition. This first report by him was published in an obstetric journal. Interestingly, he was refused TA release surgery for his equinus deformity by a German scientist, George Stromeyer, who pioneered it. Later, French surgeon operated upon him. He got impressed with the results and practiced it in children with cerebral palsy. This was the beginning of his interest in the field of CP. This disease has been named after him as Littles disease also.

Cerebral palsy is defined as motor disorder due to non-progressive damage to developing brain.

Cerebral palsy is a static encephalopathy and occurs due to the damage (insult, injury) to developing (maturing) brain (embryo to 12 years).

Readers may compare this disorder with another important childhood disability i.e. polio. While reading this text you may note that in polio only anterior horn cells of the spinal cord are damaged by a well known virus.

Damage to brain

The damage to brain means damage to motor system that is situated in the brain. This motor system is composed of many parts i.e., pyramidal, extrapyramidal and cerebellar. They may get damaged or in combination giving rise to various types of CP for example spastic, dystonic, ataxic, mixed and so on.

It is not only the motor system but also other parts of the brain may get affected. They give rise to various associated disorders like mental sub normality: hearing, language and visual impairments, etc.

Pathophysiology

There are numerous heterogeneous causes affecting the brain at various stages of its development. Therefore, there is no one distinct pathology seen in CP (as seen in polio).

However, in general the brain gets damaged mainly by biochemical and biomechanical injuries.

Deficient oxygen, electrolytes and other nutrients along with accumulation of metabolic products like CO₂, lactic acid etc. causes the injury to brain. However, severe bilirubinemia (kernicterus), inflammatory and subarachnoid haemorrhage products can also cause injury to the brain.

1. Clinically CP is a non-progressive damage whereas, usual notion is that the genetic diseases are progressive. Therefore, how can CP be a genetic disorder.
2. Unawareness about genetic basis.
3. Masking of genetic basis because of the presence of obvious events in CP to suggest brain damage.
4. Most of the people with cerebral palsy do not marry. Therefore, genetic transmission cannot be seen.

Even then, the occurrence of CP due to genetic cause can be explained by transient mutation.

Whatsoever maybe the postulates, there is definite scope to study the controversies of the causes of CP.

"A poor appetite for good books eventually leads to intellectual malnutrition"
At the same time we must keep in mind that genetic basis lessens the negligence by professionals and thereby safeguard them in legal issues. This raises the doubt that some professionals might have unnecessarily brought this factor in picture.

**Risk factors**

It has been considered that there are various risk factors present in mother and father of a child having cerebral palsy for example -
- Repeated abortions
- Too long or too frequent menses
- Malnourishment
- Drug abuse

There are some studies that have reflected a defect in the sperm. And suggests that this may be responsible for defective maturation of brain

**Classification of CP:** All the following points should be included in the diagnosis of CP

I. Based on the site of motor system damage; it is classified into following types:
- Spastic
- Athetoid
- Ataxic
- Dystonic
- Choreoathetoid
- Tremor
- Rigidity
- Hypotonic
- Mixed

II. The child with cerebral palsy should be assessed for the other neurological deficits also, severity of all the deficits and presence of complications. These clinical points should also be added in the main diagnosis -

A. Associated disorders:
- Mental Subnormality
- Poor hearing
- Poor Vision
- Learning disability
- Squint
- Difficult Speaking

B. Severity
- Mild
- Moderate
- Severe

C. Complications
- Contracture
- Dislocation
- Demineralisation
- Fracture
- Others

**Challenging Disorder**

Cerebral palsy is a challenging disorder because of the following reasons. However, to understand it, readers may compare this disorder with other disorders e.g. polio, hereditary diseases (muscular dystrophy, hereditary neurological disease like hereditary spastic paraplegia) mental subnormality, etc.

1. This disorder can be prevented or controlled is neglected.
2. The damage occurs to the most complex functional structure (or the supreme computer) of the universe, the brain.
3. Damage to the developing brain.

Because of this there remain many uncertainties regarding the best possible development of the child.

Interestingly, it is difficult to ascertain following a particular therapeutic intervention whether it is a natural development or it is due to the intervention.

4. Damage to brain affects motor system:

The presence of motor system in animals, especially human beings, compared to plants and non living things, have made all the difference in the progress and developments on this planet.

The mental faculties, definitely superior to all other animals, could not have made any progress without hand skill and the mobility present in them. This suggests, damage to an important system of the brain.

Noteworthy, this also manifests in various type (spastic, ataxic, etc.) depending on the site of motor

"The best things parents can spend on their children is time – not money"
5. **Non-selective damage** (e.g. Polio wherein only anterior horn cells are damaged).

The damage to motor system most often gets combined with damage to other parts of the nervous system (e.g. cognitive part) and give rise associated disorders.

6. **Adverse effects on musculoskeletal system**

The brunt of motor system damage is born by musculoskeletal system. This system may develop contractures, etc complications. They also need treatment along with basic impairments say spasticity.

7. **Team efforts are lacking**

In fact TEAM (Together Each one of us Achieve Maximum) efforts are lacking where as CP is the disorder that requires many different professionals to treat them because they are multiple handicaps. Multidisciplinary management is required under one roof so that professionals can easily review, and discuss the cases with each other and the child or the adult need not to be carried from one place to another place. Unfortunately in this task they waste plenty of precious time, money and energy. The team should be comprised of the family, professionals and the administrators.

8. **There is profound unawareness and misconcepts**

This makes us to realize that on one side there is no desire to improve the condition of the child and on the other side it is difficult to stop existing practices.

**Clinical Diagnosis**

A child having history of brain insult and delayed motor milestones right from the beginning i.e., birth and having no positive family history of similar disease, who on examination shows some abnormalities in motor system (abnormal developmental reflexes, muscular tone, co-ordination and balance) having associated neurological disorder (mentioned earlier) is most likely to have cerebral palsy. However, it is necessary to exclude other congenital disorders like mental retardation. There can be regression of milestones if the damage to brain occurs in infancy or later. There can be similar disorder in family if it is a multiple (say twin) delivery or the mother is having genital abnormality. There may not be any obvious history of insult to brain, there may be regression of milestones, on examination the signs may be subtle. In such a clinical situation the diagnosis becomes difficult. There remains a strong possibility of acquired or genetic disorders.

**Investigations:**

There are various investigations to suggest cerebral palsy like some findings on brain MRI or investigations of some causative factors like intrauterine infection (TORCH test)

There are many tests to suggest metabolic and genetic diseases.

However, if a child is found to have delayed motor milestones, the first paramount step is early intervention by neuro developmental therapy (and other measures to stimulate nervous system) and neurotonies. Author in his experience has found that trying to diagnose the cause of delayed motor milestones is usually expensive. This drains out the money and energy of the family and at the end the treatment remains the same as mentioned above. Another important aspect is that in due course of time, by the age of 2-3 years, the diagnosis becomes clear on clinical grounds alone.

However, it is mandatory to consult experts like pediatrician, neurologists etc. in the beginning itself and regularly later on, so that curable diseases like hydrocephalus, craniosynostosis, craniovertebral anomalies etc., are not missed.

In India most of the families consider the experts only after 1-2 years and by that time most often the strong diagnosis on clinical basis is possible. The investigations, even expensive ones can be performed, if the clinician thinks that the treatment will change after the investigations.

**Treatment**

In cerebral palsy the treatment is performed to improve following impairments -

A. **Motor deficits**

1) Type of cerebral palsy e.g. Spastic, Athetoid etc.,
2). Underlying other deficits e.g., the control (power, strength),

B. **Associated neurological deficits**

E.g. mental retardation; visual, speech and hearing impairments, etc.,

C. **Complications**

Musculoskeletal and other complications.

D. **Psychosocial diseases of the family due to CP**.

E. **Other general medical diseases seen in children and adults**.

All the above impairments give rise multiple disabilities in these children. Therefore, management by multidisciplinary team, under one roof is essential. Subsequent lectures will deal with them.

However, in general, the following sequence of man-
agreement should be practiced-

I. Early intervention
   A. Therapeutic exercises-neuro developmental and others
   B. Neurotonics
   C. Medications for seizures and other neuro deficits
   D. Management of associated disorders- hearing aids, spots

II. Intermediate intervention
   A. Continuation of measures started in the early intervention (except neurotonics that are of hardly any use after 1-2 years. However, if there is ongoing brain damage by seizures, etc., they may be continued).
   B. Mechanical devices- orthotic appliances, serial casting, etc.
   C. Medications- oral antispasticity drugs, botulimum toxin, etc.,
   D. Non ablative therapies- Neuro-stimulation, etc.,
   E. Alternative therapies- careful selection and decision to start is very important.
   F. Management of associated disorders - special education, etc.

III. Delayed intervention
   A. Ablative surgical procedures
      1. Neural- Selective Posterior Rhizotomy, Selective Motor Fasciculotomy
   2. Orthopedic surgeries

B. Management of complications
   Orthopedic surgeries for contractures, medications for deminerlization, etc

C. Management of associated disorders- surgery for squint, epilepsy, etc.

The concept of management is to enhance the development of brain so as to improve various impairments by using none or least invasive (i.e. exercises) through more invasive (medications, non ablative surgeries) to most invasive (ablative surgeries) methods, keeping in mind the better future of the family. Clinicians must remember that if the family is drained of the money, initially itself, the other children may not be able to get enough nutrition education, etc. The consequences of it are obvious.

Therefore, here invasive means not only higher tissue damage but also the higher cost of treatment.

"A good mother is worth hundred teachers."
Controversies in the physiotherapy management of cerebral palsy.

M.V.N.D. Prasad,
Physiotherapist,
Indian Family of Cerebral Palsy

Cerebral palsy disables a child in many ways in performing motor activities because it presents in many varied ways as mentioned below,
- Spastic
- Dystonia
- Athetosis
- Mixed
- Rigid
- Choreaform
- Chorioathetotic

Usually physical therapy has stretching exercises to offer for the child with cerebral palsy; stretching a spastic muscle will help only in elongating the muscle and tendons but the innate property of spasticity in not answered, however these exercises, over a period of time help in preventing the secondary effects of spasticity i.e., complications viz., contractures and dislocations. This is the most suitable method to address the children having mild cerebral palsy. However, in moderate and severe cases continuous stretching is advisable with the help of orthotic devices.

In view of these complex presentations many therapeutic measures have been evolved to reduce the above said impairments. This would facilitate the child to perform the activities of daily living independently or with the help of the device.

The selection of the therapeutic measure should be based on the following criteria:
1. The case is evaluated as an individual.
2. Specific problems are identified and related to him.
3. Treatment procedures are considered based on the best available knowledge and based on the unique responses of the individual.

Therapeutic measures:
1. Neuro developmental therapy (N.D.T.)
2. Functional therapy
3. Vojta therapy
4. Patterning
5. Sensory integrative therapy (Rood’s approach)
6. Strengthening
7. Electrical stimulation
8. Stretching
9. Conductive education
10. Massage.

N.D.T
A) Primitive reflex integration
B) Normalization of tone
C) Facilitate automatic reactions and hence normal movement pattern

A) Primitive reflex integration
a) Mat activities: activities from rolling with its

b) Prone on elbows and its associated patterns.
c) Quadruped attainment and its associated patterns and reactions, provide shoulder joint stability and subject the child for reaching activities.
d) High kneeling and the associated reactions and patterns.
e) Weight transferring reaction with absolute stability by appropriate sensory inputs.
f) Facilitate kneel walking.
g) Meanwhile teach methods of squatting and getting up from the chair helps attain both equilibrium reactions and quadriceps strengthening as well.

Diagonal Patterns

During all these procedures guide the child to concentrate on what the child is doing rather than how the child is doing.

B) Normalization of the tone:
Break up the flexor or extensor pattern synergies from supine to side lying where there is dynamic extension of the trunk and protective extension of the upper extremity in diagonal pattern.

C) Facilitate automatic reactions and hence normal movement patterns:
Translation of trunk in horizontal, vertical and oblique planes with adequate stability supplied by hands, feet and other sensory inputs including proprioceptive, visual tactile and auditory inputs.

* for all these activities there should be repetition and these should be graded according to the achievements of the child.

Is N.D.T. effective? There were significant differences in the GMFM and PEDI scores amongst children with cerebral palsy who were subjected for functional therapy (another sub specialty of N.D.T.) and physiotherapy based on the principles of N.D.T.(normalization of quality of movement).

2) Vojta: Is the treatment offered based on maturational
and hierarchical theories, this attempts to activate postural and equilibrium reaction to guide normal developments.

Principle: Reflex locomotor patterns and proprioceptive inputs are the basis for this treatment. (According to Vojta this is a neurophysiologic facilitation system for the whole central nervous system and neuro muscular apparatus). This consists of:

a) Automatic control of postures
b) Uprighting
c) Aimed movements

This suggests that early intervention helps in promoting normal walking patterns and inhibits development of abnormal patterns.

Main disadvantage of this therapy is that it should be started as early as 6-7 months otherwise if the wrong pattern sets in, then correcting them is difficult, sometimes impossible also.

Indications:

da) Moderate severe or severe central coordination disorders (C.C.D) with a possible threat of cerebral palsy.
e) Mild asymmetric central coordination disorders.

3) Patterning: Patterning in principle advocates that the damaged part, as it is still in evolutionary process, ontogeny repeats phylogeny, as was put forward by Temple Fay (Neurological organisations and respiratory control).

In this process the child is made to lie down on the ground and encouraged to creep or crawl with head, arm and legs in appropriate pattern. But this will help neither in integration of primitive reflexes nor sensory inputs in appropriate directions.

Disadvantages:

*false hope
*Interferes with social interaction and overall developments

4) Sensory integrative therapy: Is the process of organizing the sensory information for perception, learning and adaptive response. Integration of sensory system helps culminates into praxis (is a cognitive process involving cortical and sub cortical areas and it depends upon sensory integration) or motor learning.

Sensory systems taken into consideration are:

i) Tactile: This system has protective and discriminatory functions. This is essential for development of fine motor skills, speech and visual perception.

ii) Vestibular and proprioceptive system: This system plays a major role in the development of postural reactions, development of muscle tone and proximal control.

Def: Cerebral palsy is a motor dysfunction with subtle or pronounced associated sensory, affective, physical or cognitive handicaps (according to the sensory integration therapy).

Major neurological approaches used in the treatment of cerebral palsy are:

Sensorimotor: Motor and postural adjustments based on sensory stimuli and feedback mechanism of movement.

Eg:- Bobath, Brunstorm, Rood approach

Perceptual motor: Teach specific skills in deficient areas like balance, visuo-motor skills.

Eg:- Kephart, Cratty’s approach

C) Sensory integrative approach: processing and integration of sensory information and their impact on skill development.

Muscle tone affects proprioceptive feedback in two ways:-

* Poor proprioception affects:
  Execution of movement
  Body scheme
  Postural adjustment and movement pattern:
  Inadequate movement pattern influence the kinaesthetic and proprioceptive feedback

Vestibular and visual experiences are limited due to poverty of movement.

Limited tactile experiences because the child receives limited tactile input.

To achieve success in this procedure following things should be considered well.

Asymmetry:

1) Asymmetrical head position affects vestibular and visual information received by the child is affected.

2) Development of body scheme and bilateral integration is affected due to asymmetrical inputs:

- Weight bearing and weight shifting:
  1) Inadequate proximal control affects sensory feed back from proprioceptive and tactile receptors.
  2) This affects development of body scheme.

Sensory processing deficits:

1) Primary deficits: Occur concurrently
with body movement disorder due to damage in cerebellar-basal ganglion – thalamus – cortex loop and pyramidal tract.

2) Secondary deficits: Occur as a result of movement limitation. As there is poverty for movement there is reduced sensory inputs hence inaccurate proprioceptive, kinaesthetic feedback due to abnormal muscle tone.

Vice versa, abnormal weight bearing and weight shifting causes abnormal muscle tone, movement problems and bilateral asymmetry and hence the functional performance.

Principles of treatment: Early sensory integration is necessary since it
1) Assists the child in the development of new movement patterns through handling.
2) Enhances the child’s tactile vestibular and visual experiences.

This sensory integration helps in complimenting the N.D.T. by increasing our understanding of sensory processing, motivational aspect and praxis.

Research studies suggest that sensory integration therapy acts as a compliment to N.D.T. as there was a statistically significant difference in the three groups of children with cerebral palsy (who received N.D.T. alone, sensory integration alone, N.D.T. and sensory integration)

5) Strengthening: It was found that strengthening exercises might increase the spasticity and other associated features, but Herman Kabat demonstrates the importance of strengthening by a new method viz, Proprioceptive Neuromuscular Facilitation. However, strengthening should be done only after the inhibition of the primitive reflexes only. But this premise that strengthening exercises may increase spasticity is contradicted (UCLA Center for Cerebral Palsy 22-64 Rehab. Center, Los Angeles USA).

Electrical stimulation: Treatment is usually done in sleep. Youngest age is 2 years, this may be used for functional improvement, gait or maintain range of motion, facilitate voluntary muscle control and reduce spasticity.

Methodology: The current delivered should be very minimum such that there is no visible muscle contraction usually helped in co-contraction activity thus helping in enhancing the functional activity.

There was significant improvement of heel strike (dorsiflexion improved) after the gastrocnemius stimulation and gastro-tibialis anterior stimulation during gait or functional activity. However, this methodology can be implemented for those children who underwent spasticity reduction measures like surgery (S.M.F.), during the post operative gait training.

Stretching: Stretching seems to be helpful only in preventing contracture but for this there is no strong scientific basis to be called as an appropriate intervention. There are also studies being done to describe the amount of stretching to be performed by typical children and children with disabilities and outcomes of their stretching program. Stretching for few seconds by passive stretching by manual methods, was found to be less effective than the sustained passive stretch attained by the use of orthotic devices. For this purpose, even a study was designed for the effectiveness of casting only in prevention of contracture but at the same time all the activities that are can be done in N.D.T are easily performed.

Tone inhibitive casts were advantageous over stretching exercises and electrical stimulation.

Conductive education: Basically is not a therapeutic approach but rather an integration of cognitive, motor, self care, and social training.

This module has a conductor who is responsible for the child’s daily program education, nursing habitation. However, the goal is to attain independent walking and other functions. Main purpose of the conductive education is to frame activities for the children based upon the goal oriented activities.

This suggests that there is no significant statistical difference or an advantage over the other therapies.

Massage: Massage a process of excretion, but deep friction method usually triggers away the sarcoplasmic reticulum causing the release of calcium ions and hence, may cause adhesion of the tendon. Since, in a spastic muscle, as a muscle is pulled over the insertion, it is subjected to repeated micro trauma, over this, if greater degree of friction is applied there is every chance of calcium ions getting deposited between these tenon sheaths and if the inflammation from this particular site is carried into muscle then there is every chance of developing a condition called “Myositis” hence, massage becomes a relative contraindication to spastic muscle groups.

References:
1. 6th annual conference of POST 2000.
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Over view of Occupational Therapy in C.P

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Occupational Therapy is the art and science of helping people do the day today activities that are important to them despite of impairment, disability or handicap (such as in CP) and active participation in developmental milestones, ADL, Vocational and Recreation activities.

Interventions

A. Evaluate and train the patient in self-care activities such as dressing, bathing and personal hygiene to maximum independence with the use of orthoses and adaptive devices.

B. Aid in maintaining and improving joint ROM, muscle strength, endurance and coordination generally of upper limb.

C. Evaluate and train the patient in weak areas such as cognitive and perceptual deficits.

D. Evaluates the home, work and suggest modifications to provide a barrier free environment.

E. Assist locomotion with the assistance of appropriate devices.

F. Train in the functional use of an upper limb prosthesis.

G. Evaluate and train the patient in the use of environmental control systems.

H. Collaborates with the Physiotherapist in achieving set goals using activities instead of movements and with the orthotist in making splints.

D. To develop the normal reflex patterns

E. To improve the voluntary control.

F. To improve balance and coordination.

G. To develop hand functions.

H. To increase maximum independence in ADL.

Goals According to Topographical Classification

A. Quadriplegia
   1. To improve the voluntary control of upper limb and balance of trunk.
   2. Train and assist in locomotion with necessary devices.
   3. To improve gross hand functions.

B. Paraplegia
   1. Training the non-affected limb to make them independence in ADL.

C. Diplegia
   1. To improve the balance of trunk and pelvis.
   2. To improve fine motor movements like in-hand manipulation and hand writing skills.

D. Monoplegia
   1. Training the affected hand as well as unaffected hand to make them independence in ADL and for better prognosis with the help of one-handed techniques.

E. Athetoid / Ataxic / Dystonic
   1. To improve the tone and facilitation of movement's.
   2. To develop the pattern of movements eg: Shoulder flexion, abduction Elbow supination.

Clinical Evaluation

A. Identification data
B. Higher functions
C. Presenting complaints (Age at with problem recognized)
D. Medical History

Prenatal  Natal  Postnatal
E. Motor developmental History

F. Reflex assessment
   1. Primitve
   2. Mid Brain
   3. Brain Stem
   4. Cortical

G. Neuro muscular components
   1. Tone
   2. Vol. control
   3. T/C D
   4. Involuntary. Movements

H. Assessment of hand function
   Grading
   1. Unable to perform
   2. Initiation
   3. Able to perform with typical pattern
   4. Able to perform

1. Reach
   Forward side backwards overhead

2. Grasp
   Cylindrical Spherical Hook Mass

3. Release
   Voluntary Involuntary

4. Prehension
   Pad to Pad Pad to side Lateral Tripod

5. Non-prehensile Movements
   Pushing Pulling Tapping Clapping

6. In-hand Manipulation
   Palm to finger Finger to palm Shift Rotation

1. ADL Assessment Grading
   1. Totally Dependent
   2. Initiation
   3. Partially Dependent
   4. Independent

1. Sucking / drinking
2. Eating
3. Bathing
4. Brushing
5. Dressing

6. Toileting
7. Combing

J. Play
   Construction Destructive Solitary Group

K. Perceptual and Cognitive assessment
   Perceptual Assessment
   1. Stereognosis
   2. Proprioception
   3. Kinesthesia
   4. Body Scheme
   5. Rt & Lt Discrimination
   6. Form / object constancy
   7. Figure ground
   8. Spatial relation

   Cognitive Assessment
   1. Orientation
   2. Attention
   3. Memory

L. Method of Locomotion

Techniques in O.T.

A. Inhibitory Techniques (Spasticity)
B. Facilitatory Techniques (Flacidity)
C. Facilitation of Movements / vol. Control.
D. Positioning
E. Reflex inhibitory Techniques / Facilitation of Normal Reflex patterns
F. Oro-motor reeducation and handling techniques
G. Facilitation of developmental milestones
H. Developing hand skills

A. Inhibitory Techniques
   1. Neutral warmth
   2. Gentle shaking of rocking
   3. Slow stroking
   4. Slow rolling
   5. Light with compression
   6. Maintained stretch

B. Facilitatory Techniques
   1. Fast stroking
   2. Fast rocking
   3. Fast rolling
   4. Heavy with compression

C. Facilitation of Movements.
   1. Joint Compression
   2. Weight bearing with the help of devices
   3. Improving the voluntary control with normal pattern of Movement
   With the help of activities
D. Positioning

Weight bearing in different portions i.e.
1. Squatting
2. Quadriped
3. Kneeling
4. Half-kneeling
5. Standing
6. Standing on one leg

E. RIP

1. For Rooting & sucking
   a. Facial Massage
   b. Blowing activities
   c. Three point Technique

2. For ATNR, STNR
   a. Maintaining the position
      of neck in midline
   b. Facilitating Rolling pattern
   c. Maintaining squatting position (Neck Flexion)
   d. Prone weight bearing (Neck Ext.)

3. For Spinal Reflexes
   a. Weight bearing
   b. Splints / Calipers of necessary

4. NRP for TLR
   a. Strengthening of spinal and neck muscle with the help of activities
   b. Prone weight bearing
   c. Extended arr. Weight bearing

5. NRP for cortical level
   a. Different positions in balance board

F. Oro-motor Reeducation

1. Good postural alignment
   a. Proper positioning of neck and trunk
   b. Corner chair
   c. Semi inclined lying
2. Desensitization in and around the mouth with touch
3. Tapping or quick stretch of cheeks & lips or vibration for children with hypotonicity.
4. Firm rhythmic sustained pressure can be applied through lower jaw facilitating a chin tuck portion for children with hypertonicity.

Handling Technique
   Sleeping – side lying prone
   Toiletting – potty chair, potting with bar to hold

G. Facilitation of Developmental Milestones

1. Rolling over
2. Creeping
3. Coming to sit
4. Crawling
5. Kneeling
6. Half – kneeling
7. Coming to stand
8. Walking

H. Developing hand skills

Hand is the most sensible organ in our body having primary means of interaction with physical environment. It allows complex intervention of finest judgment of texture, volume and temperature. It also provides the way for expression, communication, perception, enjoyment etc. deals respectively to each individuals.

1. Reach

   Supination control seems to be one of the greatest areas of difficulty for children with cerebral palsy. Difficulties with initiating or sustaining fore arm supination effects reach often compensated with abnormal posturing at the trunk, shoulder, elbow or wrist.

   Positioning
   a. Sitting with proper support to head & trunk.

   b. Supine or side lying.

   Interventions
   a. Initial emphasis on general arm movement with the help of contact with activities such as blocks, pegs, musical toys.
   b. Arm and Hand alignment in various planes (i.e. flexion, extension, abduction)
   c. Finger extension during arm movement with the help of activities like:

   - Building towers
   - Building Blocks
   - Hiding the object back.
   - Transfer of objects from one to another. (i.e. table to container)

2. Grasp
   Children with CP will be having the following problems which intern interferes in Grasping.

   a. Sustained fore arm pronation
b. Sustained wrist flexion  
c. Finger flexion that prevents hand opening,  
d. Thumb in palm position

Positioning  
a. Supported sitting.

Interventions (Cylindrical, Spherical and Hook)  
Initial emphasis on development of Palmar grasp with the arm in different positions (flexion, extension, abduction)

Activities like  
- Squeezing the clay or sponge  
- Pulling the limbs  
- Placing the different shaped objects in the container  
- Opening the container grasping with one hand  
- Removing the pegs from peg board  
- Carrying the basket  
- Holding the ball

3. Prehension (Tripod, Pad to pad, Pad to side)

Positioning  
a. Supported sitting.

Interventions

- Three – jar check  
- Removing Beads

- Touching pictures  
- Operating key  
- Tearing News paper  
- Operating clips, scissors

4. Release

Children with Cp will be having the following difficulties while releasing objects.

a. Fisting or tight finger flexion (Spastic cerebral Palsy)  
b. Difficulty with sustain arm position during object release (athetoid, ataxia)  
c. Hyper extension of fingers in release (Involuntary)

Positioning  
- Supported sitting

Interventions

- Release of objects into the container placed on various positions  
- Releasing at midline or crossing the midline.  
- Release the tiny objects (Beads) into a small opening

5. In – Hand Manipulation

Problems that limit the in – hand manipulation in Cerebral palsy include

a. Limited finger isolation  
b. Inability to grasp and hold objects effectively.  
c. Inability to hold more than one object in the hand at the time.  
d. Insufficient stability to control object movement with in the finger. Pads thus drops objects frequently (athetoid, ataxia)

Finger to Palm Translation
Activities like

- Getting coin out of a purse
- Hiding an object in the hand
- Removing pegs from Pegboard to hold one or two in the hand
- Crushing or crumpling paper.
- Picking up different utensils at a time (E.g.: Pen, spoon).

Palm to Finger Translation

Activities like

- Moving a coin from Palm to finger to keep it into the purse on the table.
- Moving a peg from palm to finger to put it into the board.
- Putting one of the utensils down while holding the other.

Shift

Activities like

- Turning pages
- Spreading or separating the cards
- Adjusting a spoon for use
- Rubbing the dirt or paint in the hand

Rotation

Activities like

- Removing or putting a small jar lid from nuts.
- Rotation of pencil or spoon.
- Turning cubes or rotating puzzle

6. Bilateral hand use

Children with cerebral palsy (Hemiplegia or Monoplegia), face difficulty in Bilateral hand use.

Activities like

- Pushing and pulling the objects
- Holding large objects
- Holding a cup while pouring liquid.
- Grading the activities
- With different shapes & sizes
- Small to big
- Light weight to heavy weight
- Group

General Problems effecting Hand skills

- Poor visual skills
- Spasticity (Grade - IV)
- Perceptual & Cognitive deficits
- Poor postural control & trunk movement
- Disorder in Bilateral integration of movements.
- Lack of support from family members

Resistance to O.T

1. Spasticity grade IV where severe contractors and deformity / Tremors.
2. Severe MR
3. Visual impairment
4. Hearing loss
5. Hyperactive children
6. Involvement of parents
7. Involvement family members

Challenge to Occupational Therapy

1. In Cerebral Palsy, children have to be trained, facilitated, Educated for normal pattern of movements. & milestones where as in other cases like Trauma children have to be retrained reeducated and restored.
2. Burden of Occupational Therapist

Team Approach
An Overview of Various Complimentary Therapies in Cerebral Palsy

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Improvement in the condition of a child with cerebral palsy following a particular treatment is very often questioned. The argument against this is that without any treatment also they show improvement. This happens due to their growing age, during which both the body and brain develops.

There is no progressive damage to brain in CP, therefore brain can continue to develop, but slow and incompletely. However, there are many research publications in reputed journals claiming improvement with physiotherapy, occupational therapy, allopathic medicine and surgical procedures. These publications are comprised of good number of cases and long follow-up.

Similarly, there are many reports, but usually anecdotal (a few case reports) claiming improvement with alternative therapies.

The scientific world has started showing concern to this field. In many developed countries alternative medicine is in vogue. For example, ketogenic diet in epilepsy. There is an interesting story about this. A film director lost hope to relieve his young son from seizures. One day he saw an old book in a library about ketogenic diet. He read in the book that this diet can improve seizures. He started this diet for his son who improved tremendously. He then developed a research foundation related to this subject. Like this many research foundations are working to explore the possibilities of treatment with alternative methods.

General Guidelines to Practice Alternative Methods of Treatment

In general author suggests that till firm scientific basis of a particular alternative method of treatment is proved, the therapy should be practiced with extra precautions. Following points must be taken into consideration by professionals and the families having child with cerebral palsy.

1. The alternative method should be an additional or complementary to the scientifically proved and routinely practiced methods.

In other words, alternative methods should not be a substitute, mostly to routinely practiced methods.

2. The families having a child with cerebral palsy as such spent plenty of time, money and energy for a long duration and sometimes lifelong, in the management of their child. Therefore, if alternative method also exhaust them, then they will get badly disappointed and depressed.

3. The method should be practiced to help the families and not the professionals only.

4. The method should be ultimately helpful to the society at large.

In general, there is a tendency in most of the human beings to try those methods of treatment which are easier to carry out e.g. giving two spoonful of tonics. Where as physiotherapy, occupational therapy or educational trainings are difficult to perform and parents as well as the child would try to avoid it.

The parents may choose some easy to perform alternative methods. It is the duty of the professionals to suggest the method, which is best for a particular child. They should not get prejudiced to the method they know of.

In general, many alternative methods are quite safe. However not infrequently, harmful effects have also been observed like myositis ossificans, fracture, dislocations, etc.

Additional Methods:
There are additional methods to treat cerebral palsy and many more can be added to this list. (to see the circle)

Many more...

It is obvious from the list of additional methods that there are enumerable number of methods. Many of the
following questions may arise in the minds of the families -

- Which method is good for my child?
- How shall I confirm the efficiency of the method
- Will I lose precious time (first few years of child's life) in experimenting one after another these methods?
- Why scientists are not proving which method is good for which kind of problem in cerebral palsy?
- Is it possible that the method may cause deterioration in my child's condition?
- and so on

Indeed, most often the professionals may not be able to reply these questions scientifically.

There is, indeed, a great need to perform prospective studies on cerebral palsy. A CP software has been prepared by us and in future it would help in answering above mentioned queries of the families.

Here we are publishing a few of these therapies to generate your scientific concern to this field.

How mad is man in emotions

A person was relaxing on the terrace of his ten storey building.

An another person came and asked him anxiously are you Mr. abc? He suddenly replied anxiously - what happened?

The first person said your son is abusing you in the street in front of the public.

Mr. abc became very emotional and said - if son is abusing him then why to live? So he suddenly jumps from the building.

Immediately after jumping he remembers that he has no son.

Then when he was passing through the fifth floor, he realises that he is even not married.

When he was about to hit the ground, he realises that he is not Mr. abc, he is actually Mr. bcd.

Moral of the story -
In emotional state, we may forget our own identity, even the name.

Dear life members of I.F.C.P.
The Annual General Body Meeting 2003 of IFCP will be held at Amar Jain Hospital, Manasarovar, Jaipur at 4.00 pm on Saturday, 20th November, 2003. You are requested to make it convenient to attend the same.

Agenda
1. Make necessary amendments to IFCP by laws
2. Future action to be taken up for the growth of IFCP
3. Any other issue with the permission of chair
4. Election

During this time the election will be held to elect office bearers and four executive members, therefore you are here by informed that the nomination can be filled by the life members those who have completed three years of membership.

Your nominations should reach president, Indian family of cerebral palsy head quarters on or before 10th November 2003.

For any assistance regarding election please contact us.

President, Ph. No: 040-23318204

"Present era is teaching us price of everything but value of nothing."
Outlines Special Education for People with Cerebral Palsy

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Special education conveys the feelings for cerebral palsy which is a life long condition and how a humane approach to the problem is essential and the fact that although they are suffering from neurological disorder, the children are nonetheless people and not patients. Special education is a combination of various disciplines working together. Special education is an intricate work and each remedial plan created is highly individualized.

What is Special Education?
Special Education refers to specially designed instruction, which meets the unique needs of an exceptional Child. It involves the use of special materials, teaching technique, equipment and/or other facilities.

Who Needs Special Education?
Special children are those who require special education and related services if they are to realize their full human potential. They require special education because they are markedly different from one or more in other ways. They may have mental retardation, learning disabilities, emotional disturbances, physical disabilities, speech, language and communication disorders and learning impairments, visual impairment or may even be GIFTED.

In the recent years there is a change in thinking about the nature and treatment of special educational needs, that is special education deals in terms of the presence of a problem learning rather than the presence of a handicapping condition.

History and Evaluation of special Education
Education and (re)habilitation is a recent phenomenon, although there have been fractionated attempts at providing rehabilitation and related services to the handicapped in our society more than a century.

Historically, the manner in which various societies have dealt with their persons with disabilities have varied. Some communities have killed them, and a few have cared for them. The desire to educate or habilitate the disabled has been growth of our concern for our fellow man and in this respect concern for the disabled varied from one person to another. But concern is not action, and it was not until 17th Century when the institutions were built. The important breakthroughs lead to more concrete changes by Jean Marc Itard 1800.

Why Special Education has Grown.
There are several reasons why special education services were grown to the people with disabilities but most important reason is that growing awareness that people with disabilities can become contributor and independent members of society.

The Special education for persons with cerebral palsy depends upon the condition of motor functions and intellectual abilities.

Children with mild cerebral palsy having average or more intelligent quotient can cope up in normal educational process with adaptive devices or remedial teaching (even they also require special educationist’s guidance). The other group usually who cannot adjust because of their severe motor disablility and sub average intellectual condition are considered for special education. Systematic special education is imparted to this group.

Individualized Education Programme
The main feature of special education is individualized education programme (I E P) as the children with cerebral palsy do not have homogenous condition and associated disabilities and individualized educational plan is of utmost requirement.

An I E P is the most important document which prescribes the new lease of life to people with disabilities. Individualized Education Programme has the following main components

1) Assessment:
Assessment is very important to know the child’s functional level before starting any intervention. Assessment involves planning.
data collecting procedures collecting assessment data, data processing and hypothesis formation and communicating assessment data.

Some of the common assessment measures are a) norm referenced assessment b) criterion referenced assessment, c) adaptive to handicap assessment and d) ecological assessment. Assessment forms the basis for selecting instructional goals and objectives and information for a specific activity should include what exactly the individual is able to do.

2) Goals:

A goal represents the achievement anticipated for a child in one year. Prioritization of the deficit skills depends upon the assessment made and goal set. The goals were set for long term, short term and the specific objective was taken for the immediate intervention.

3) Implementation

To implement the goal teaching aids, adaptation were prepared depending upon the individual condition of the child. The goal implementation is done by special educationist, parent and related therapist.

4) Evaluation

Evaluation was done periodically and annually. If the goals were achieved the same were upgraded, if not achieved, the probable reasons that are interfering in the learning process were found out like behaviour problem, organic restriction and emotional disturbance. Adequate intervention were provided to reduce the interfering agent for training.

The following are some of the areas where special educationist works on

1.) Sensory

Usually children with cerebral palsy have some or other sensory deficits. The sensory stimulation is given to the children to use their residual senses optimally. The sensory stimulation, which facilitates them to have general awareness, lays good foundation stone to learn for all other areas of the skills. Sensory stimulation helps and educates the children to enjoy the beauty of the environment. Sensory training is given in the areas of kinaesthetic, visual, hearing, smell and tactile.

2.) Motor

Children with cerebral palsy need physiotherapy to improve motor functions. On advice of physio and occupational therapists productive motor activities could be incorporated in special education activities, because it is important to give opportunity to the children with cerebral palsy to participate in all activities, like other children.

The physiotherapeutic goal could be followed up and strengthened by special education activities. Many simple play activities such as throwing ball, kicking ball, running and jumping as well bending.

3.) Self-help

Self help skill training should be given to the children with cerebral palsy so that they can at least take care of their basic needs. Training can be given depending upon their level of severity or the condition. Many times it is necessary to have adaptations to overcome the limitations of the motor function of the people with cerebral palsy.

4.) Cognitive Skills

Cognitive skills are the underlying skills that must function to successfully read, hear, think, prioritize, plan, understand, remember, and solve problems. Cognitive skills training is imparted by way of different special educational activities.

5.) Language Skills

The child who is unable to communicate by any means and unable to understand communication presents enormous problems of management.

There are many reasons for delay in language development in C.P; the acquisition of speech is delayed because of the heavy emphasis given on physical therapy during the first few years of life of the child with C.P. Expressive and receptive language is improved with special education activities. The people with cerebral palsy who are unable to make it out should be adapted to alternate augmentative communication.
People with cerebral palsy should be taught to read, even if they can read only to a limited extent. Reading is a socially useful skill. It is a means of obtaining information and leisure, and it helps in language development. It is important to teach reading in a structured manner, especially to children with cerebral palsy. Reading skill is not innate to children, they need to be taught to read.

Writing
Initially great thrust is given to train them in writing skill by making them to copy, trace, join the dots strokes and follow the maze. Many adaptations would be used to facilitate the child to hold the writing materials. Some children would be trained to use type writers to improve the writing skills along with using rubber stamps to write.

7.) Behaviour modification
Most of the times, special educators have to work with children who pose a lot of behaviour problems. Behavior modification can be used to increase desirable skills as well as to decrease undesirable problematic behavior. Behavior modification is a scientific technique, which incorporates structured, pre planned and specific attempts of modifying observable behaviors primarily by altering the events and in the environment.

8.) Socialisation
Socialising is one of the important skill which equips people with self-confidence acceptance by peer group and to cope up with the societal demand to function as a participatory member in the society.

9.) Vocational Training
Vocationalization is the ultimate aim of rehabilitation. It helps the persons with disabilities in improving occupational competency and prepares persons for working as well as better economic independence, self esteem and help him to be a contributor member of the society.

"Little things affect little minds."

Conclusion
Special education is a multi dimensional and multi model process. Special education takes in to account whole child with cerebral palsy and tries to develop the child holistically. It helps in curative correcting and promotive aspects to make the child to have a better quality of life. To impart special education parent partnership is an utmost requirement. Parent should actively participate in special educational process then only the expected goal can be achieved.

How to Make Early Diagnosis of Cerebral Palsy
A baby who has undergone damage to brain and / or has following clinical picture is likely to manifest full blown picture of cerebral palsy:
- A baby who remains dull most of the time and has less movements of limbs and head and / or; cannot move the limb in a purposeful manner instead it just goes in an in-orderly manner (usually in one particular direction only).
- The thumb in palm and / or persistent fistng beyond 2 months of age.
- Reduced head circumference
- Retarded growth
- Delayed social smile
- Persistence of primitive (early infancy) reflexes beyond 6 months.
- Abnormal turning of neck and head
- Asymmetry of body posture, movement and reflexes.

Scientific reasons to have early intervention
- A developing brain has lot of plasticity and if stimulated can develop neuronal synaptic proliferation and thereby can lead to development of nervous functions. Therefore, early the better.
- It has been noted that if the abnormal brain pathways of the damaged brain are repeatedly stimulated, the channels get regularized, they get fixed and then to make alterations in them is very difficult. It means inviting troubles by getting late.
- It is interesting to observe different kinds of development in different kinds of environmental stimulation of genetically same and similar brain damaged people.

"Think big, fast and ahead."
Cerebral Palsy
Need of Training Courses in India

Prof. A.K. Purohit

Cerebral palsy is a childhood physical disability that occurs due to damage to the brain during gestation, delivery, post-natal period or up to the age of twelve years. The damage to brain is non-progressive in nature. Therefore, the child continues to develop after the damage. Hence, the child may be retarded and may have abnormal physical signs too.

The damage to the brain affects mainly the motor system. The system consists of many components and any one or more of them may get affected. The other part of the brain (non-motor system) may also get affected. Noteworthy, is the fact that there is no selective damage to one part of the motor system, as happens in polio where only anterior horn cells get affected. Therefore, the motor disability is of different type and the children may have many other associated disabilities as well due to the damage to other parts of the brain e.g. mental retardation, speech abnormalities, seizures, behavioural disturbances, squint, visual and hearing impairment.

The awareness about this disorder is lacking in both the medical as well as social fields. Around 150 children are born every day who develop cerebral palsy. There are already 25 lakh such children in our country. The presence of one such child, who is having multiple handicaps, is enough to affect the life of all the other members of the family.

There are extremely few specialists in India who are dedicated or at least treating 10-20% of all their cases as cerebral palsy. There are very few colleges who are providing post-graduation degrees or diplomas on cerebral palsy (developmental paediatrics) in physiotherapy, occupational therapy and special education, etc paramedical branches and very little curriculum, if any, on cerebral palsy during M.B., B.S. and medical post-graduation degrees, whereas such curriculum and many other courses are available on mental retardation in paramedical branches.

India has very few centers that are dedicated to cerebral palsy. They are able to cater to just 1% of the cerebral palsy population of India with the available limited resources, and are not in a position to provide very comprehensive training, which includes medical, paramedical education, habilitation and vocation.

A much more painful state of affair is that many centers in India combined cerebral palsy with mental retardation. This, in fact, is not correct because around 50-75% children with cerebral palsy have fairly good mental (higher cognitive) functions. They should be habilitated with normal children.

The addresses of thousands of families having children with cerebral palsy and hundreds of medical and paramedical people who are willing to serve such children from each district of our country are available with us. If the professionals of each district are trained they will immediately have these families to serve. In due course of time district cerebral palsy centers could be opened with the help of the professionals and the families so as to make the management of these children a continuous process along with maximum possible cost benefit.

Objectives

A. Primary

1. To educate and train medical and paramedical Personnel

The objective of the presently designed courses is to train professionals in the field of cerebral palsy. Children and adults with cerebral palsy have multiple disabilities like motor, mental, special sensory impairments, etc, that require management from respective specialists. Therefore, the professionals for training will be drawn from various fields as mentioned elsewhere in this course protocol.

2. Research

To generate interest and to perform research in the field of cerebral palsy so as to provide best management to the child in his socio economical and geographical conditions.

B. Secondary

1. To Develop Curriculum

To develop curriculum for post-graduation in the field of developmental physical medicine, occupational medicine, special sensory disabilities and post-graduate diploma in developmental pediatrics, orthopedics and neurosciences.

2. To Develop Skilled Human Resource

To develop skilled human resources for district cerebral palsy centers

Types Of Training Courses

There will be following two groups of the candidates depending on their specialization:

Group One- Medical doctor(Pediatrician, Neurologist, Neurosurgeon, Orthopedic Surgeon, Plastic surgeon), Physiotherapist, Occupational therapist

Group Two- Speech therapist, Special educator, Clinical psychologist, MSW, Dietician, Vocational counsellor, Dentist, Ophthalmologist, Gynaecologist, General Physician, Others

They will be trained for any one of the following courses depending on their future involvement in the field of CP.

A. Cerebral Palsy Orientation Course 15 days
B. Cerebral Palsy Basic Module Course 30 days
C. Cerebral Palsy Certificate Course 3 months
D. Cerebral Palsy Fellowship 6 months
सेरींगल पाल्सी  
CEREBRAL PALSY

Act immediately to avoid Terrible Effects of Spasticity  
(The results of persistence of significant spasticity for 3 - 6 years)

एक बार जब सही स्थिति में होता है, तभी इसे जोड़ने का काम आसान होता है।

Due to brain insult muscles of the limbs become stiff (rigid) and last active. Later, due to the persistence of spasticity for long time the muscles get shortened permanently and become fixed.

Later, the joints get deformed and become fragile. They get easily injured.

The joints may get dislocated or ankylosed. The person lives with discomfort and pain.

The working of limbs becomes more and more worse.

Such terrible results were never expected by us.

Otherwise, we would have taken our child for treatment at the earliest.

Visit IFCP:  
www.ifcporg.com

“A problem well stated is a problem half solved.”  
“Who has begun has half done.”  
“Think big, fast and ahead.”
One of the reasons for physical disability in children can be Cerebral Palsy. 

What is Cerebral Palsy?

Cerebral palsy (CP) is a group of disorders that affect movement and muscle tone. It is caused by damage to the brain, usually before, during, or just after birth. CP can affect how a child moves or holds their head, as well as coordination, balance, and posture. 

Features of Cerebral Palsy

1. Difficulty with balance and coordination
2. Difficulty with speech and communication
3. Weakness or stiffness
4. Epilepsy in some cases

Management and Treatment

1. Physical therapy to improve muscle strength and movement
2. Occupational therapy to help with daily activities
3. Speech therapy to improve communication

A problem is your chance to do your best.

Slow, persistent and silent work does everything.

A mother - laughs our laughter, sheds our tears, returns our love, fears our fear.

A journey of thousand miles must begin with a single step.