

## Agenesis of the Corpus Callosum

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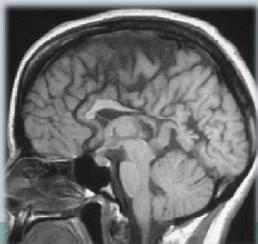
## Corpus Callosum



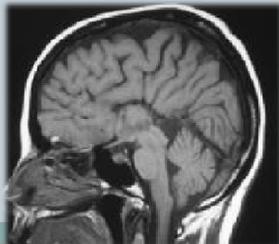
## Agenesis of the Corpus Callosum

- Rare congenital condition where the corpus callosum is partially or completely absent

Partial ACC



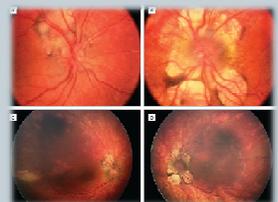
Complete Absence of ACC



## Agenesis of the Corpus Callosum-Ocular Signs and Symptoms

- Retinal lesions
- High refractive errors
- Strabismus
- Nystagmus
- Hypoplasitic optic nerves

Aicardi syndrome



### Agenesis of the Corpus Callosum-Signs and Symptoms

- General developmental milestone delays
- Poor motor coordination
- Seizures
- Hearing impairments
- Abnormal head and facial features
- Mental retardation



### Meet Dora Partial Agenesis of the Corpus Callosum



### Dora

- Nonverbal
- Global developmental delays in all areas
  - Unable to walk until almost 4 YO
- Skipped several developmental milestones
  - Crawling on belly, symmetrical creeping on hands and knees
- Severe sensory integration and regulation challenges

### Dora



Dora  
December 2010



School

- Preschool program at a special education self-contained classroom within a public school
- Occupational and speech therapy services in school
- Dana more delayed compared to her peers



Intensive Private Therapy

- Speech
- Occupational
- Floortime



Dora  
May 2011

- "Visual spatial challenges limiting her emotional development, regulation and imaginary play"
- "Vision therapy could help her bring meaning to sight"



### Phone Conference with Referring Psychologist

- Beginning to use language, but has poor comprehension
- Needs visual strategies to support comprehension



### Phone Conference with Referring Psychologist

- Overly dependent on what she is seeing and unable to visualize
- Aggressive-a symptom of her anxiety
  - Feels helpless → reacts



### Phone Conference with Occupational Therapist

- Challenges in motor planning and severe dyspraxia
- Unable to cross midline
- Unable to perform any bilateral movements
- Severely under reactive to vestibular and proprioceptive input

### Phone Conference with Occupational Therapist

- Unable to imitate physical actions
- Often bumped into people and objects
- Difficulty locating objects in a busy visual environment
- Difficulty finding objects she recently dropped



### 5/4/11 Visual-Cognitive Evaluation- Developmental Eye Evaluation

- VA & CV: unreliable
- Retinoscopy: OD +0.75 SPH, OS +0.75 SPH
- Bell Retinoscopy: poor grasp and release of accommodation
- Ocular Motor: poor fixation and significant jerky eye movements and severe head and body movements
- Bruckner and corneal light reflex: no strabismus

### Visual-Cognitive Evaluation- Developmental Eye Evaluation

- Stereo: none (stereo fly & other Randot)
- CNP: 10 inches
- Ocular Health: Unremarkable

### Reflex Evaluation

- Post-rotary nystagmus- no post-rotary nystagmus after horizontal spinning
- Head-Righting Reflex-not fully developed
- Dolls Head-inadequate fixation
- Moro-fully sustained
- Asymmetrical tonic neck-fully sustained
- Symmetrical tonic neck-fully sustained
- Spinal gallant-fully sustained
- Tonic Labyrinthine- fully sustained
- Parachute reflex-normal response

### General Movement Evaluation

- Balance-unable to balance on 1 foot for 3 seconds or longer
- 2 Foot Hop-unable to hop forward or backwards with 2 feet together-galloped instead
- Skipping- unable to skip. Ran/galloped instead
- Unable to catch a ball or balloon
- Unable to walk on a line on the floor or walk on a wide balance beam

## Visual Thinking

- Unable to identify colors or shapes
- Able to stack up to five blocks on their broad sides, and up to three blocks on their narrow side
- Unable to match basic block designs
- Able to match two pegboard designs
- Able to complete all six shapes on the Solid Formboard
- Able to complete one of the six shapes during the Split Formboard-Half

## Diagnosis

- P-ACC with associated developmental and cognitive delays
- Convergence insufficiency
- Ocular motor dysfunction
- Sustained primitive reflexes and poorly developed visual vestibular reflexes
- Delays in visual thinking

## Treatment

- No spectacle Rx was recommended.
- A program of vision therapy was started that focused on visual-vestibular stimulation, integration of the primitive reflexes sustained, fixation, pursuits, saccades, accommodation and fusion
- In-office vision therapy 3x/week

## Team Meeting



## Visual Strategies to Increase Comprehension

- Drawings and pictures to support verbal language
- Visual schedules
- Sign language in addition to verbal language

## 6/13/11 First Progress Evaluation

- Leaving the next day to go to Egypt for the summer
- No longer bumping into objects
- More aware of her body in space
- More language
- Tolerance to finish tasks had improved
- OT reported improvements in ability to perform fine motor tasks and improvements in regulation and attention

## 6/13/11 First Progress Evaluation

- Convergence Near Point: 5 inches
- Ocular Motility: improved fixation. Able to track vertically with minimal head movement. Significant head movement with horizontal movement.
- Spiral Vectogram-able to appreciate depth with minimal ranges
- Randot Stereo: able to appreciate 100 sec arc on Randot animals

## 6/13/11 First Progress Evaluation

- **Post-rotary nystagmus-mild nystagmus observed after spinning**
- Head-Righting Reflex-not fully developed
- **Dolls Head-saccadic intrusions**
- Moro-fully sustained
- Asymmetrical tonic neck-fully sustained
- Symmetrical tonic neck-fully sustained
- Spinal gallant-fully sustained
- Tonic Labyrinthine- fully sustained

### Treatment Plan

- Continue her home vision therapy activities while away this summer
- Resume vision therapy 2-3X/week in the fall when she returns to the U.S.
- The home vision therapy program continued to focus on visual-vestibular stimulation, integration of the primitive reflexes sustained, fixation pursuits, saccades, accommodation and fusion.

9/7/2011

### Second Progress Evaluation

- Recently returned from summer in Egypt
- More verbal language since returning, but also an increase in yelling and aggression
- Significant difficulty with transitions
- Kindergarten program at same school - Difficulty in school causing challenges?



9/7/2011

### Second Progress Evaluation

- Mood swings
- Poor regulation
- Poor receptive language skills causing anxiety



9/7/2011

### Second Progress Evaluation

- Ocular Motility: fixation improved, improved hand-eye accuracy with tasks, decreased head movements with pursuits and saccades
- Reflex testing:
- ATNR, STNR fully sustained
- Head-Righting Reflex-not fully developed
- Post-rotary nystagmus: minimal nystagmus
- Poor cooperation and unable to test other reflexes

9/7/2011  
Second Progress Evaluation

- Visual Thinking-unable to match on top of a block pattern
- Receptive and Expressive Communication-impulsive, difficulty slowing down, yelling

Treatment and Plan

- Continue her vision therapy session 3x/week
- Add bilateral activities and those that involved crossing midline, digital discriminative movements with ocular fixation, hand thinking, visual thinking, and receptive & expressive visual-verbal tasks, such as treasure hunts, Simon says, etc.
- Because of mom's concern with school, I arranged to observe Dora at school and met with her teachers.

10/26/2011  
School Visit

- One main teacher and 1 paraeducator for the 10 children in DG's special needs self-contained Kindergarten class
- Using visual cues, including PECS and visual timer
- Answers were all repetition
- Dora had significant challenges with language retrieval

Team Meeting

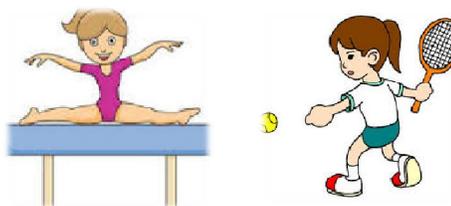


### New School

- Grades K-2
- Classroom of 16 neurotypical children with a 1:1 aid/shadow for Dora



### Recreational Activities



4/5/2012  
Last Progress Evaluation

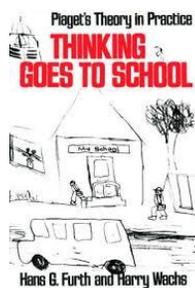
- VA with Picture Chart : 20/20 OD, OS, OU Dist & Near
- Ishihara Color Test: 14/14 OU
- Convergence Near Point: 2 inches
- Fixation: much improved
- Ocular Motility: slight head movements, slight midline jerks with saccades
- Cover Test: Distance Ortho, Near 4 PD exophoria
- Stereo: 100 sec arc Randot Circles

4/5/2012  
Last Progress Evaluation

- Visual Thinking: able to place blocks over shapes to match (basic tangrams)
- "Amazing improvements"-Mom



### Discussion



### 20/20 Hindsight

- Attempted lenses: tints, binasal occlusion, yoked prism or low plus lenses may have aided in visual skills development and sensory integration



### Agenesis of the Corpus Callosum & Vision Therapy

- Part of my history with children with severe developmental delays
  - Genetic Testing
- Bilateral-giving them what they need
- Multidisciplinary support
- "Reading has really taken off"
- "A miracle for my son"

### Help from you

- What have been your experiences?
- What has helped or has been a barrier in treatment?
- Resources