



Understanding the diagnosis of Cognitive-communication difficulties

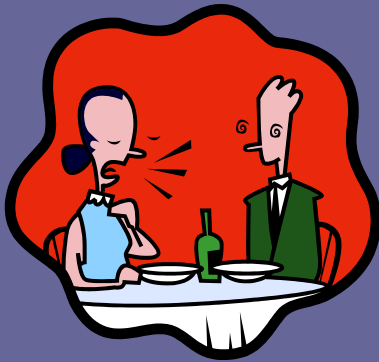
Jacqueline McIntosh

Nicole Charles

Geoff Cloud



“Video evidence proves me to have been, following my stroke, as ugly and boring a conversationalist as can be.” – John





The nature of Cognitive Communication disorders

Cognitive communication difficulties fall into three reasonably distinct categories:

1. Primary Language deficit - a clear identifiable deficit of language functions (e.g. predominantly aphasia), with an impact on cognition.
2. Primary Cognitive deficit - a clearly identifiable cognitive deficit, (e.g. impaired memory with an impact on communication).
3. Primary Cognitive Communication deficit –

Can it help us when we are thinking about the client group to think along these lines?



Definitions of CCD

The acquired communication and social difficulties that result from injury to the brain.

The disruption of the relationship between language and cognitive processes for communication and behaviour.



After a brain injury (e.g. stroke) a person may experience *cognitive* changes – changes in their thinking abilities. They may have primary cognitive difficulties that impact on communication e.g.:

Attention & concentration problems	<i>Finding it hard to listen</i> <i>Getting easily distracted</i>
Memory problems	<i>Difficulty recalling conversations</i> <i>Repeating themselves</i>

There may also be primary cognitive communication difficulties that do not have a straightforward link to a single cognitive function e.g.

Verbosity	Attention & concentration difficulties Reduced monitoring of self and others Disinhibition Reduced reasoning and problem solving skills Memory problems
Reduced body language	Reduced attention Reduced monitoring of self and others Flat affect



Traditional Thoughts



Diffuse/Cognitive Process

- Attention
- Perception
- Memory
- Visual spatial processes
- Linguistic processes



Right Hemisphere Language Difficulties

- Left sided inattention
- Attention difficulties
- Inappropriate information content
- Comprehending and expressing emotion
- Decreased prosody and recognition of prosody



C: 40.0, W: 120.0

Contrast:

Gantry: 18.5°

FoV: 230 mm

Time: 4000 ms

Slice: 5 mm

Pos: 77.725

HFS

F: STANDARD

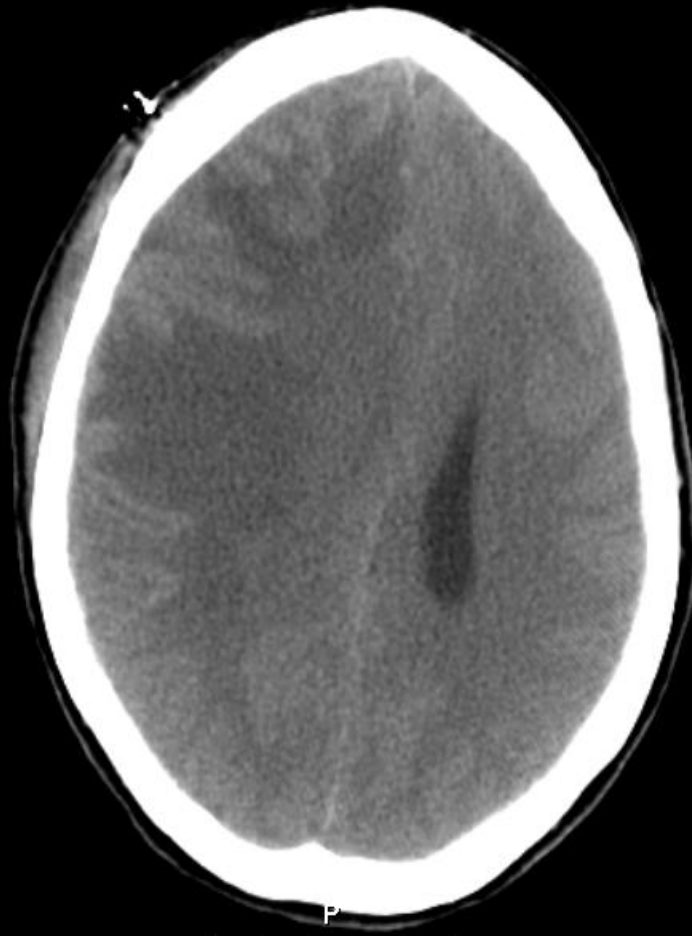
180 mA

120 kV

Image no: 26

Image 26 of 36

28/04/2005, 02:23:53



L

2

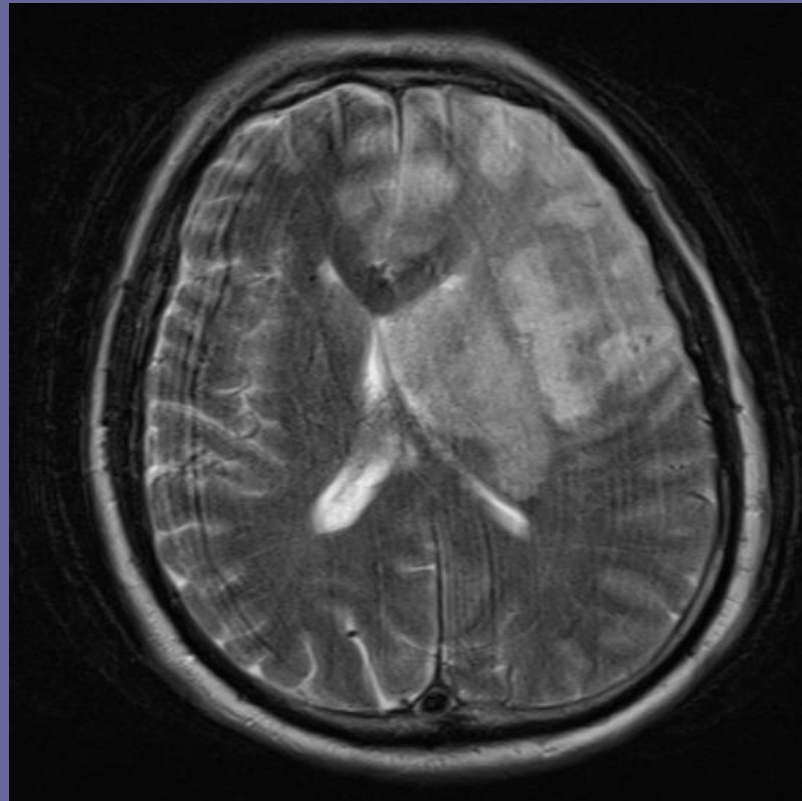


Frontal/Executive Function

- Self monitoring
- Abstract thinking
- Problem solving
- Judgement
- Social perception
- Self awareness
- Meta cognition
- Regulation
- Organisation
- Synthesis/Integration
- Goal setting
- Planning and sequencing
- Initiation



PK MRI



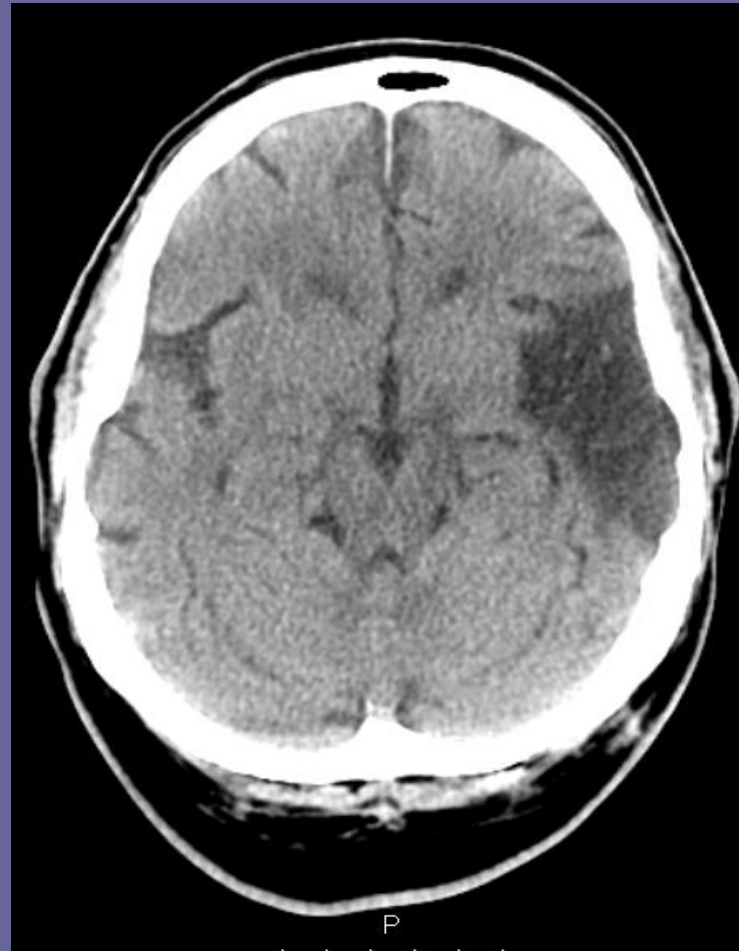


Left hemisphere/Language Function

- Vocabulary
- Semantics
- Syntax
- Prosody
- Pragmatics
- Phonology
- Verbal expression
- Auditory comprehension
- Reading
- Writing
- Associated Non verbal communication
- Word finding



DH CT





But



- E.T.
- Watch this DVD and think about where the brain injury is



- “It would seem much more plausible that broadly similar clinical syndromes may result from very differently sited cortical, sub-cortical or tract lesions within distributed neural systems that are essentially similar between subjects with the same handedness and uneventful development.”

Wise, RJS. (2003).

Language systems in normal and aphasic human subjects: functional imaging studies and inferences from animal studies.

British Medical Bulletin, 65, 95-119.



BOLD fMRI: Temporal Dynamics of Picture Naming



Areas Active During Visual Object Processing, Early Lexical Access

Right



Left

Core Language Areas - Active Throughout



Areas Active During Articulation, Self-Monitoring



Our Research



Background

- Importance of knowing more to aid appropriate assessment and management.
- Currently there is no operational definition of the impairments associated with CCD and limited assessment tools.
- Key problem with research in the field selecting participants on the basis of site of lesion (either RHD or TBI).
- Milman et al (2009) – more services in USA directed to CCD than aphasia.
- Lack of awareness of this disorder post-stroke.
- It can't be assessed and treated if it is not



Aims

- This study aims to:
 - determine the incidence of CCD in an acute stroke hospital population
 - correlate CCD with area of brain lesion
 - explore the potential for a simple interview based screening tool to identify CCD



Method

- 100 stroke admissions to St George's were assessed
- 7 days post admission/ medically stable
- Informed consent
- Semi-structured interview with Researcher
- MMSE
- Researcher completes Stroke Screening Tool
- Thorough review of medical notes
- Neuroradiologist analysed and classified MRI/CT scan data



Interview

- Prior to the interview, the SLT will have no information about the patient apart from their name.
- The interview takes approximately 15 minutes and is based on a structure laid down by Myers (1999).
- Six topic areas: the patient's assessment of his or her deficits, the events surrounding their hospitalisation, the focus of their current rehabilitation, personal history, future plans and activities of that day.

Tool

CCD	Aphasia	Apraxia	Dysarthria
Verbose	Word finding difficulties	Groping	Facial asymmetry
Tangential	Agrammatism	Limited vocalisation	Reduced intelligibility
Egocentric	Jargon	Difficulties with voluntary oral movements	Degraded speech sounds
Slow info processing	Decreased comprehension	Perseveration	Consistent oromotor difficulties
Repetitive	Paraphasias	Inconsistent phonemic errors	
Uni-directional conversation	Spelling errors		
Reduced body language	Circumlocution		
Inappropriacy of topic/content/style	Using gesture/ facial expression		
Passive/ reduced initiation	Using fillers		



Results - incidence

	CCD (%)	Aphasia (%)	Dysarthria (%)	Apraxia (%)
Diagnosis	52 (52%)	34 (34%)	46 (46%)	10 (10%)
No diagnosis	48 (48%)	66 (66%)	54 (54%)	90 (90%)
95% confidence interval	42 – 62%	25 – 44%	37 – 56%	6 – 17%
Treating SLT diagnosis	45 (45%)	25 (25%)	33 (33%)	15 (15%)



However...

NO significant associations with CCD:

- age
- days post-stroke
- gender
- English as first language
- previous stroke

Significant associations with CCD

- MMSE score
- education level



Site of lesion

- No significant association between features of CCD and site of lesion
- No significant association between degree of small vessel disease and CCD





Site of lesion and diagnosis

Site of presenting stroke	Number	CCD		Aphasia		Dysarthria		Apraxia	
		Y	N	Y	N	Y	N	Y	N
Left	44	22	22	25	19	14	30	10	34
Right	38	22	16	6	32	23	15	0	38
Posterior	15	6	9	1	14	6	9	0	15
Bilateral	1	1	0	1	0	1	0	0	1
Unsure	2	0	2	0	2	1	1	0	2

- A chi square test was carried out to see if there was any significant association between site of presenting stroke and presence of CCD. The chi square statistic was 1.44 with 2 degrees of freedom. This is *not* significant.



Implications

- For *research*
 - Significant area for further research
 - Potential to develop more tools
- For *clinical practice*
 - All clinicians to be aware of CCD (to enable appropriate referrals)
 - SLTs need to ensure they can provide an appropriate service



The End