

Spread and shift of the speech relevant cortex in cases with early manifested tumors



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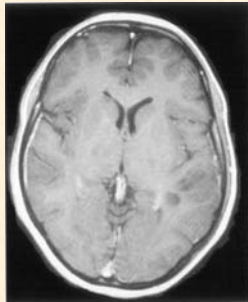


we present two cases with early manifested tumors in the perisylvian region. of the left hemisphere with pharmaco-resistant epilepsy. During the presurgical video-EEG-monitoring the patient had subdural plates (fig. 1) to prepare the resection of the epileptogenic areas. To delineate the eloquent cortex the patient had electrical stimulation of the cortex.

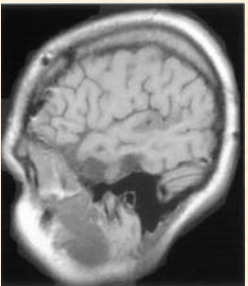


Fig.1 X-Ray of the skull with subdural plate

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MRI, postcontrast, 10 ml Magnevist, no relevant enhancement



MRI, T1, precontrast, sagittal image

CASE 1 C.G. female, 15 years old, focal epilepsy with psychomotor seizure and rare GM since 8 years.

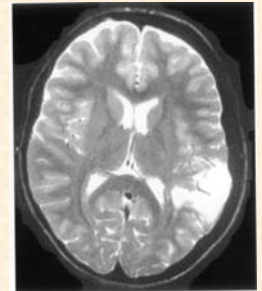
Imaging studies showed a polycystic tumor in the left perisylvian region. The Wada-Test showed a left dominance for both, the expressive and sensory speech. Electrical cortical stimulation (50 Hz, bipolar, 8 sec, 0,5-15mA) demonstrated predominant expressive speech disturbances with only little sensory interaction anterior to the tumor in the left lateral temporal cortex. The cortex over the tumor was not eloquent for speech. Related to the severe ictal cortical discharges in one small part of the eloquent cortex, this area has to be included into the resection. But speech was almost preserved. The patient had only little amnesic speech disturbances disappearing after 6 month.

Lateralisation of Speech (dichotic listening & Wada Test)

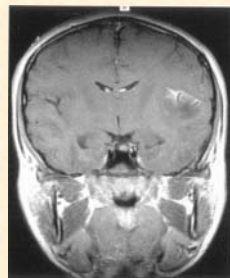
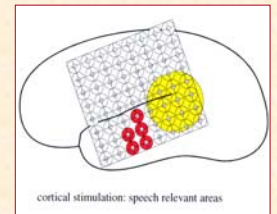
- dichotic listening, Fused Rhymed Words Test,
 Dominances: right 14, left 4, $\Lambda = \ln(R/L) = \ln 14/4 = +1.25$
- Wada-Test: 125 mg Amobarbital,

(N Items) Task	injected hemisphere	
	left	right
initial	122 sec speech-Arrest (SA)	no speech arrest
(4) object naming	4 errors	0 errors
(6) reading	3	0
(4) Token Test	3	1

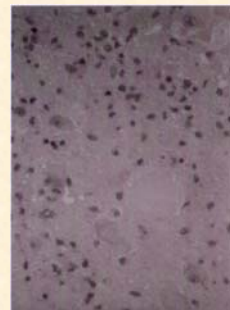
Conclusion: Speech functions in the left hemisphere



MRI, T2, precontrast, polycystic tumor



MRI, postcontrast, 10ml Magnevist, no relevant enhancement



Histology of the resected tumor: ganglioglioma

CASE 2 R.S. male, 15 years old, focal epilepsy with GM since 1 years.

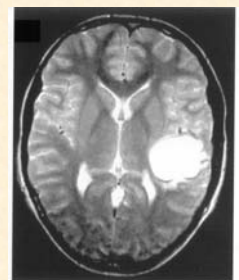
Imaging studies showed a polycystic tumor in the left perisylvian region. The Wada-Test showed a dissociation of the speech dominance: there was a preserved left dominance for the expressive speech and positive bilaterality for for sensory speech. Electrical cortical stimulation (50 Hz, bipolar, 8 sec, 0,5-15mA) demonstrated only little sensory speech disturbances in the left Wernicke area (false token test) (green dotted circles). The area over the developmental tumor was not eloquent for speech. Anterior to the tumor there was an area for expressive speech wide-spread in the lateral temporal cortex (gyrus temp. sup. and medium)(red circles). After removal of the tumor, the patient had no speech disturbances.

Lateralisation of Speech (dichotic listening & Wada Test)

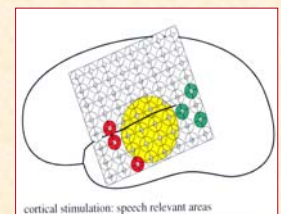
- dichotic listening, Fused Rhymed Words Test,
 Dominances: right 4, left 24, $\Lambda = \ln(R/L) = \ln 4/24 = -1.76$
- Wada-Test: 125 mg Amobarbital,

(N Items) Task	injected hemisphere	
	left	right
initial	25 sec Speech-Arrest (SA)	no speech arrest
(4) object naming	4 errors	0 errors
(6) reading	5	0
(4) Token Test	3	1

Conclusion: positive bilaterality, intact understanding during speech arrest



MRI, T2, precontrast, polycystic tumor



Conclusion It is agued that gangliogliomas arising in the cortex have resulted from disordered development and if so must also be regarded as hamartomas. They are very early manifested. The youngest patient reported was 2 month old (Russel & Rubinstein 1977). On the other hand gangliomas behave like true neoplasm, which, as in their histological appearances would suggest, are of slow growth and of relatively benign character. Our two cases support the idea of very early manifestation. The Localisation of the tumor in the supposed speech relevant areas of the cortex resulted in spread and shift of the individual speech areas in both patients. The localisation and lateralisation of the speech area is clearly influenced by the developmental tumor and demonstrates the early plasticity for speech functions of the temporo-parietal cortex.