

Fronto Subcortical Structure Damage and OCD in a Sample of Stroke Patients

Abou Zied M.Y., El Sayed N., Essawy H.

Abstract

Background: OCD among patients with stroke is an issue that recently gained attention, as one way for understanding that behavioral disorders in terms of anatomical cerebral dysfunction. **Method:** The sample studied contained 50 patients with stroke of different etiologies. They were examined Neurologically and their psychiatric evaluation was done using the shortened version of the present state examination, and the ICD₁₀ diagnostic criteria. **Results:** O.C.D was diagnosed in 5 patients out of the whole 50 studied making a 10% value, OCD was found as secondary to stroke in 3 patients and the other 2 had the disorder before the onset of stroke. It was found that lesions in the caudate and nearby structures specially on the right side and with lesion in the parieto temporal region with deep extension to the basal ganglia to be corresponding with secondary O.C.D.

Introduction

Obsessive compulsive disorder (OCD) is a common neuropsychiatric disorder characterized by intrusive repetitive thoughts and/or behaviors, which cause marked distress. In the last decade advances in neuro-imaging have led to a greater understanding of the neurobiology of this disorder. (SAXENA et al., 1998).

C.T studies were the first to suggest brain abnormalities in OCD. The first was a C.T study of subjects with childhood onset OCD (Behar et al., 1984) and another one was done in adults with OCD (Stein et al 1993) found ventricular volumes that were significantly larger than in controls, and was higher in patients with compulsions alone compared with patients with mixed type.

Luxenberge et al., 1988 found that caudate nucleus volume on C.T was significantly smaller in male adolescents with childhood onset O.C.D than in male controls.

Compared with CT MRI provide superior spatial resolution, distinction between gray and white matter. In 1992 Scarone et al.,

found a significant increase in the volume of the right head of the caudate nucleus on MRI and loss of the normal left > right asymmetry in-patients with OCD.

However, Robinson et al., 1995 found smaller caudate nucleus volume and enlarged ventricles in adult OCD patients compared with controls.

C.T scan in stroke patients can give us both clear distinct anatomical localization and to a great extent an idea of the function of that area through monitoring the dysfunction caused by both Hg and infarction. Aim of the work is to study how far the structural damage of the Fronto - basal ganglia-Thalamo cortical circuits and other cerebral area, could be implicated in the pathogenesis of acquired OCD in those stroke patients as a way of relating it to what might be happening in idiopathic OCD patients and also to highlight the size of this kind of problem among those stroke patients. Also, another aim was to study what is the effect of this structural damage

on idiopathic OCD as a proposition for further management of refractory patients.

Material and Method

Patient Selection:

The patient sample consisted of 50 patients with stroke due to either infarction or Hg. (not traumatic) 15 of which was intracerebral Hg of different sites and 35 had infarction within the domain of different arterial supply

All the patients were conscious alert attentive and were not a phasic and can express themselves verbally, very clear.

Method

Patients were examined neurologically and psychiatric evaluation and diagnosis was done using the present state examination the shortened version, on basis and according to the ICD₁₀ criteria for OCD (Presence of obsessions or compulsions that had caused marked distress or had interfered with the patients normal routine or had caused marked slowing.)

Other Diagnostic Tools:

'The anatomic lesion localization was helped by the use of C.T scan for the brain or a MRI examination.

Results:

Obsessive compulsive disorder was diagnosed in 5 patients out of the 50 studied making a total of 10% value. Acquired O.C.D was found secondary to stroke in patients out of the 5, and the 3 were of the compulsive act type.

The first patient the compulsion was of the washing cleaning type. He had a family history of OCD of similar type; clinically he had left hemiparesis.

The C.T scan for this case revealed small size infarction in the caudate and nearby structures on the right side. The patient was a male aged 52 years, with history of hypertension, he had no other psychiatric disorder.

The second patient is a female aged 57, did present on examination with compulsions of the checking type in the form of making sure more than once of the drugs taken, or not and of the dose. Also, making sure that the night shift doctor is available by phoning the nurse several times a night, this symptoms was severe enough fulfilling the criteria for OCD diagnosis.

The patient had right side cerebral infarction in the caudate area with left hemiparesis; she had history of hypertension but no family history of similar condition.

The previous two patients did develop the onset of OCD few days after stroke attack and they were 2 patients out of 3 with infarction in the caudate site.

The third patient, who developed acquired OCD after stroke attack, showed compulsive behavior in the form of somatic type. He had a false repeated urgency for micturition and a feeling that the bladder is full, this urge was resisted by the patient with failure, as it always ended by him going to the toilet without voiding any drop or only very few drops. This symptom was of much trouble to the patient and his relatives who were caring for him. The patient's age was 65 with no history of previous such symptoms and no family history of OCD and Neurologically the patient had left hemiparesis. The C.T scan (Fig I) showed an old left temporal lesion with dilated corresponding lateral ventricle and recent

right infarction affecting the right parieto-temporal region with deep extension reaching the basal ganglia specially the outer part of the lentiform nucleus (putamen), the lesion had mild edema compressing the corresponding lateral ventricle.

Two other patients showed idiopathic OCD before the onset of stroke. In one of them, the patient's age was 54 years, medical treatment showed only mild improvement in O.C symptoms and reoccurrence occurred just on stoppage of treatment within 4 months, when he had stroke with right thalamic hypertensive hemorrhage, his previous resistant OC symptoms which was

of both washing, cleaning type showed complete improvement and recovery after few days. This patient had an idea of contaminated hand that he hardly tried to resist but he failed and compulsively he washed them for hours. C.T scan fig. (II) showed right inferiomedial thalamic hemorrhage.

The other patient with previous OCD of the checking type before the onset of stroke, presented to us with a CT scan picture of right capsular infarction. This patient had a strong family history of OCD and showed mild change in his symptoms just after the onset but did not recovered and remained with residual symptoms.

Fig. I (two figures):

C.T Scan: Bilateral Temporo-Parietal Infarct (The Right Side Is Recent With Edema Compressing The Lateral Ventricle).

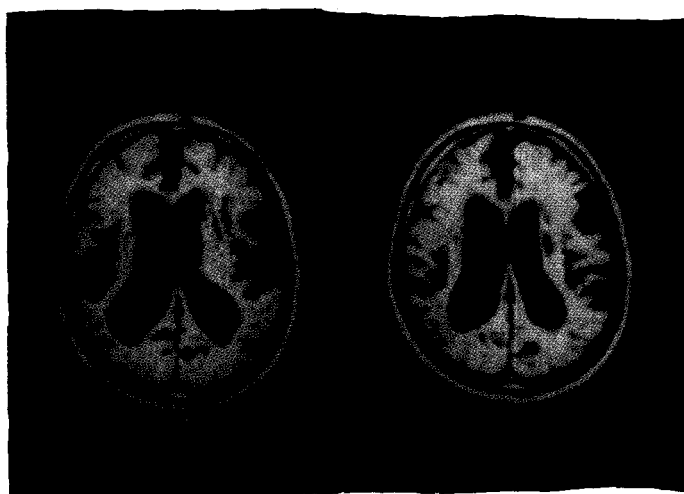
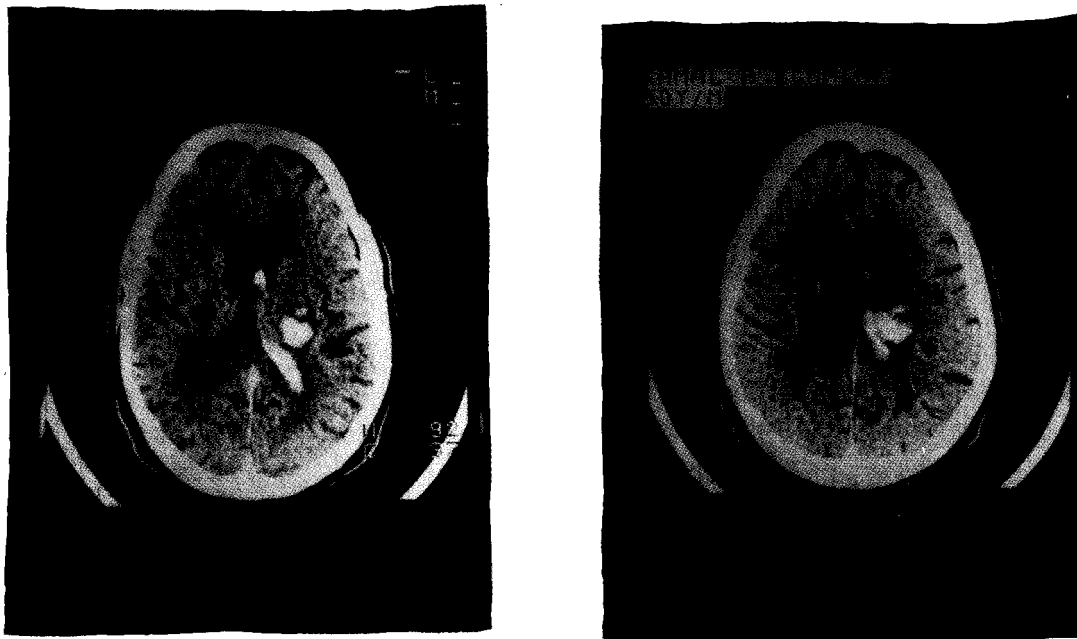


Fig. II:
Hemorrhage In The Inferomedial Thalamus (Blood Is Seen In The Lateral



Discussion:

The lesions in most of patients that had OCD in the study were affecting the frontal cortex and the caudate nucleus agreeing with most of the international work. That was done by Munoz et al., 1996, who found a correlation between changes in blood flow in the basal ganglia and treatment response in SPECT studies for OCD patients. Again Gied et al, (1996) found in a case study that size of the basal ganglia using M.R.I in a 12 years old boy with an exacerbation of OCD following infection with B hemolytic streptococcal organism to be acutely enlarged.

Also, Maragonne et al, (1991) agreed upon the role of basal ganglia in the production of symptoms in O.C.D. The second important finding in this study, is what found in the patient with inferiomedial thalamic Hg. The lesion resulted in cessation of

idiopathic O.C.D (fig. 11). This arouse theoretically, the possibility that there are certain sites injury of which could result in O.C behavior. In this work the right basal ganglia and other sites, which could relieve an already present O.C.D, was found in this study in the inferomedial right thalamus where it might be in the normal conditions a source of stereotype behavior and it can suggest that OCD behavior is under balance between two areas, the basal ganglia and thalamus, the two are opposing each others.

In conclusions, our finding assure that lesions in the basal ganglia could result in obsessive compulsive behavior of the compulsive type. This work is on the right side about lesions, which is thalamus and could alleviate idiopathic O.C.D and according to our study it's the right inferiomedial thalamus.

References:

Behar, D. Rapoport, J. L. Berg c. J. et al (1984): Computerized Tomography and neuropsychological test measures in adolescent with obsessive Compulsive Disorder American Journal of Psychiatry 141,33,369.

Gieded J.N Rapoprt J.L. Leonard H.L. et al J.Am Acad Child Adolesc. Psychiatry 1996,35c7 913-912.

Laplane D, Levasseure M, Pillon "Obsessive compulsive and other behavioral changes with bilateral basal ganglia lesions. Brain 1989, 112 : 696-725).

Luxenberg J.S. Swedo, S, E Flamant M.F. et al (1988): Neuroanatomical abnormalities in obsessive compulsive disorder determined with quantitative x ray computed tomography, American Journal of psychiatry 145.1089-1093.

McGuire PK. The brain in obsessive compulsive disorder, J Neurol. Neursurgy. Psychiatry 1995, 59 457-459.

Maraganone. D M. Lees A J. Marsden CD. Complex strotypies after right putminal infarction, a case report Movment Disorder 1991, 6 : 358-61.

Marcelol, Berthies, MD, Jaime Kulisevesky, MD, Alex. Gironell M,D and Jose A Heras, MD "Obsessive - Compulsive disorder associated with brain lesions : Neurology, 1996, 47 353-361

Robinson D. Wu.H Munne, R.A. et al (1995): Reduced cadudate nucleus volume in obsessive compulsive disorder, Archieves of General Psychiatry 393-398.

Saxena A.L. Brody J.M. Schwartz and L.R. Baxter: Neuroimaging and Fronto-Subcortical Circuitry in Obsessive Compulsive disorder, British Journal of Psychiatry 1998(173) Suppl 35 26-37.

Scarone S. Colombo, Colombo, C. Livian s, et al (1992): increased right caudate nucleus Size in Obsessive compulsive disorder, detection with magnetic resonance imagine.

Stein D.J Hollander, E. chan, S, etal 1993: Computed Tomography and neurological Soft Signs in obsessive compulsive disorder, Psychiatry Research 50, 143-150

Authors:

Abou Zeid Y.M.

Lecturer of Psychiatry
Faculty of Medicine
Ain Shams University

El Said N.

Lecturer of Psychiatry
Faculty of Medicine
Ain Shams University

Essawy H.

Lecturer of Psychiatry
Faculty of Medicine
Ain Shams University

Address of Correspondence

Abou Zeid Y.M.

Lecturer of Psychiatry
Faculty of Medicine
Ain Shams University

الوسواس القهري فى مرضى السكتات الدماغية

هو موضوع اكتسب اهمية مؤخرًا لانه احد الطرق لفهم التغيرات السلوكية فى ضوء الاضطراب
المخى الوظيفى و التشريحى.

الطريقة:تحتوى العينة المدروسة على خمسين مريضاً بالسكتات الدماغية من مختلف الاسباب. تم
فحص هؤلاء المرضى من الناحية العصبية و التقييم النفسى وفقا للتصنيف الدولى العاشر.

تم تشخيص الوسواس القهري فى خمس مرضى (من المرضى الخمسين) اى بنسب ١٠% و قد وجد
ان منهم ثلاث مرضى جاء لهم المرض كنتيجة ثانوية للسكتة الدماغية و ان مريضين كان لديهم
المرض قبل بداية السكتة الدماغية. و قد وجد ان الاصابة بمنطقة الذنب الدماغى و المناطق المجاورة
لها و خصوصا على الجانب الايمن و ان الاصابة فى الفص الدماغى و التى تمتد بعمق الى (basal
gang) هى المسئول عن الوسواس القهري الثانوى.