



CODEN (USA): IAJPBB

ISSN: 2349-7750

INDO AMERICAN JOURNAL OF PHARMACEUTICAL SCIENCES

Available online at: <http://www.iajps.com>

Review Article

OBSESSIVE COMPULSIVE DISORDER

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Abstract:

OCD belongs to the group of personality disorders and is characterized by recurrent uncomfortable thoughts (obsessions) and/or repetitive behaviours (compulsions). Altered levels of neurotransmitters like serotonin, norepinephrine, dopamine and glutamate have been observed to be responsible for this condition. Various brain areas including orbitofrontal cortex, caudate nucleus and cingulate cortex shows dysfunction in OCD patients, thus contributing to the pathophysiology. The most effective lines of treatment present today are pharmacotherapy and cognitive behavioural therapy. Selective serotonin reuptake inhibitors like fluvoxamine, fluoxetine, sertraline etc are the first line of drugs. In subjects who are not responsive, other drugs like tricyclic antidepressants, SNRIs, SARIs and MAOIs are tried. But for a better prognosis, pharmacotherapy and cognitive behavioral therapy are practiced simultaneously. In patients who are resistant to all the above mentioned treatments, electro convulsive therapy or psychosurgery can be tried.

Key words: *Obsessive compulsive disorder, serotonin, noradrenaline, cognitive behavioural therapy.*

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Please cite this article in press as **Ibel Chiramel Fredy et al**, *Obsessive Compulsive Disorder*, Indo Am. J. Pharm. Sci, 2015;2(9).

INTRODUCTION

Obsessive compulsive disorder is a psychiatric disorder that is characterized by recurrent, disturbing thoughts or images and/or repetitive behaviors. Obsessions may be defined as preoccupation with a fixed idea or an unwanted feeling or emotion, often accompanied by symptoms of anxiety. Compulsion is an irresistible impulse to act, regardless of the rationality of the motivation.

OCD involves various types of obsessions that include fear of contamination (61%), aggressive thoughts (43%), need for symmetry (35%), sexual (31%), and religion (30%). Cleaning and washing constitutes 50% of the compulsions in the general population. Other common compulsions among OCD patients include repeating (38%), checking (18%) and hoarding (7%).

OCD, a condition which was believed to be very rare and difficult to reason until recently, has now been reported to be the fourth most common psychiatric disorder. Its remarkable how drugs like fluvoxamine and sertraline have evolved as effective treatments until a few years ago, the individuals who had blasphemous, sexual or other obsessive thoughts were believed to be possessed by the Devil and the only treatment was exorcism.

But a lot of challenges still lie ahead of us when it comes to providing an OCD patient a better quality of life, the first being able to make them seek professional help. The individuals often suffer in silence since most of them find it embarrassing to talk about their strange thoughts and behaviors. Therefore the patients who seek professional help make up a very small group.

DISEASE BURDEN:

The Epidemiological Catchment Area study indicates the prevalence of OCD in diverse cultures. Studies also suggest a life time prevalence of 2.5% in the general population. In India, the life time prevalence was found to be 0.59% and a six month prevalence of 0.51%. However, studies have led us to the conclusion that today OCD is highly prevalent and more prevalent than bipolar disorder and schizophrenia. Even though women and men were believed to be equally affected, there is a little higher representation of OCD among women compared to men.

AGE OF ONSET:

Usually OCD appears in the late adolescence and early adult life. The National Co Morbidity Survey Replication reported the mean age to be 19 years. In adults, the mean onset for OCD was found to be between 22 and 35 years of age. The representation of younger age onset OCD is higher in males and more than half of the subjects are single.

HISTORY:

During 16th and 17th century, a period when the reasoning ability of man was limited, individuals who showed the symptoms of OCD were believed to be cursed or possessed by dark spirits. It was Esquirol in 1837, who recognized that obsession disorders were a form of mental illness. He termed this disorder as 'monomania' and explained it as "a chronic disease of the brain, without fever, characterized by a partial lesion of the intellect, the emotions or the will". However, this concept was later modified by various eminent psychiatrists like Pierre Janet, Morel, and Sigmund Freud etc. Thanks to them and many other eminent psychiatrists who came after them, today we have found treatments for OCD that's definitely far better than exorcism.

CLINICAL FEATURES AND DIAGNOSIS:

Clinical features of OCD:

- 1) **Obsessions**
- 2) **Compulsions**
- 3) **Anxiety Symptoms**
- 4) **Avoidance Behaviors**
- 5) **Depression**

OCD are of four types:

- both obsessions and compulsions- majority
- only obsessions - less than 25%
- with only compulsions - 5%
- Primary obsessive slowness.

The subject of obsession can vary over a wide range. It could be as simple as recurrent thoughts of a song or as extreme as violent or sexual themes. Most of the patients are confused and horrified at their thoughts and try very hard to get rid of them, which often fails. They try to avoid the situation that gives them such thoughts, which will then start interfering with their normal life. For example, an individual who has obsessive thoughts of physically hurting his close friend and since he cannot control these thoughts and fearing the consequences, tries to avoid his friend.

Compulsions usually sprout due to the individuals' fear that if he does not carry out the particular action he is going to face the consequence of harm. Even though the patient has an insight to the absurdness of his activity, he gives into the compulsion. A patient who has compulsion of washing is fearful of the dreadful disease and he continues washing since he cannot get the obsessive thought out of his mind.

The onset of OCD is generally preceded by an unpleasant event in the individual's life. The symptoms usually start appearing 3 to 6 months after the event. As mentioned before, OCD is basically associated with obsessions which could be unpleasant, blasphemous or fearful thoughts and/or

compulsions which makes the individual carry out an action even though most of the times, the individual realizes completely that he is giving up to an irrational thought by carrying out that action.

The criteria for diagnosing OCD are given by Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR; APA 2000) is as follows:

A. Either obsessions or compulsions:

Obsessions as defined by (1), (2), (3), and (4):

(1) Recurrent and persistent thoughts, impulses, or images that are experienced at some time during the disturbance, as intrusive and inappropriate and that cause marked anxiety or distress

(2) The thoughts, impulses, or images are not simply excessive worries about real-life problems

(3) The person attempts to ignore or suppress such thoughts, impulses, or images, or to neutralize them with some other thought or action

(4) The person recognizes that the obsession thoughts, impulses, or images are a product of his or her own mind (not imposed from without as in thought insertion)

Compulsions as defined by (1) and (2):

(1) Repetitive behaviors (e.g., hand washing, ordering, checking) or mental acts (e.g., praying, counting, repeating words silently) that the person feels driven to perform in response to an obsession, or according to rules that must be applied rigidly

(2) The behaviors or mental acts are aimed at preventing or reducing distress or preventing some dreaded event or situation; however, these behaviors or mental acts either are not connected in a realistic way with what they are designed to neutralize or prevent or are clearly excessive

B. At some point during the course of the disorder, the person has recognized that the obsessions or compulsions are excessive or unreasonable. Note: This does not apply to children.

C. The obsessions or compulsions cause marked distress, are time consuming (take more than 1 hour a day), or significantly interfere with the person's normal routine, occupational (or academic) functioning, or usual social activities or relationships.

D. If another Axis I disorder is present, the content of the obsessions or compulsions is not restricted to it (e.g., preoccupation with food in the presence of an Eating Disorder; hair pulling in the presence of Trichotillomania; concern with appearance in the presence of Body Dysmorphic Disorder; preoccupation with drugs in the presence of a Substance Use Disorder; preoccupation with having a serious illness in the presence of Hypochondriasis; preoccupation with sexual urges or fantasies in the presence of a Paraphilia; or guilty ruminations in the presence of Major Depressive Disorder).

E. The disturbance is not due to the direct physiological effects of a substance (e.g., a drug of abuse, a medication) or a general medical condition.(1)

PATHOPHYSIOLOGY:

The causes for OCD IS mainly divided into four groups:

- Biological theories
- Behavioral theories
- Psychodynamic theories
- Other approaches

Biological Theories:

1. Role of neurotransmitters:

a) Serotonin: Studies have shown decreased levels of serotonin in OCD patients. This finding is further strengthened by the fact that selective serotonin reuptake inhibitors (SSRI) have anti-obsessional effect.

b) Noradrenaline: OCD patients were found to have a higher plasma norepinephrine levels

c) Others: Dopamine, opioids, and neuropeptides have also been implicated in OCD.(2)

2. Genetics:

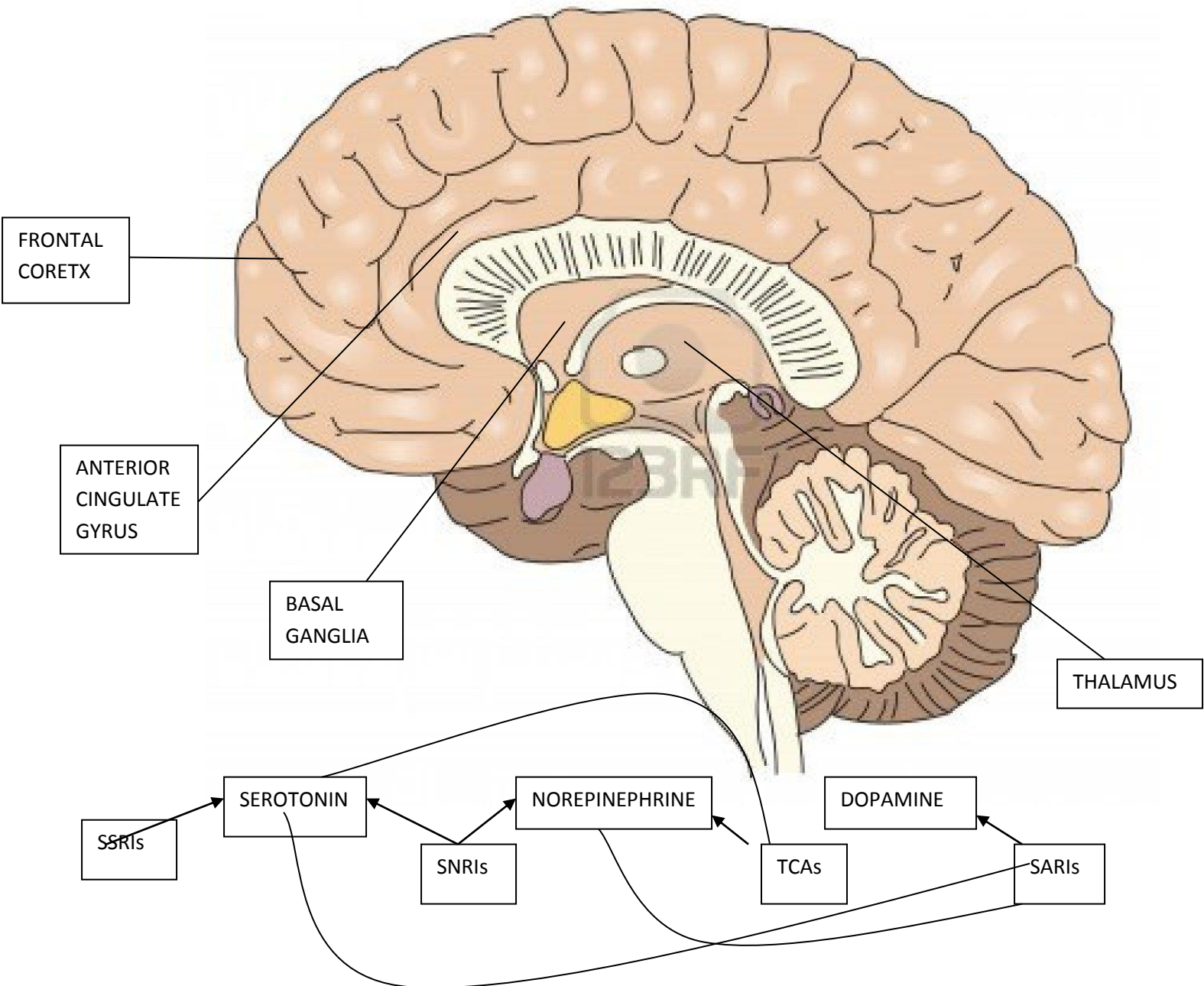
The strongest evidence suggesting genetic basis of OCD comes from twin studies. Studies also suggest a greater risk of OCD among first degree relatives (35%). The various loci suggested in the involvement with OCD include 1q, 6q, 9p, 19q, 7p and 15q. Other genes that have been reported to be associated with OCD include Dopamine transporter genes, Glutamate related genes GRIK, GRIN2B and white matter genes OLIG2 and MOG(3). Therefore, studies suggest OCD to be an oligogenic disorder that does not follow simple Mendelian fashion of inheritance.

3. Brain imaging shows non-specific abnormalities on magnetic resonance imaging of the brains in OCD including an increase in ventricular-brain ratio, abnormalities in the caudate nuclei, the orbitofrontal cortex and the anterior cingulate cortex.

A study conducted among 10 OCD patients by measuring the regional cerebral blood flow (rCBF), using technetium ^{99m}Tc-*d,l*-hexamethylpropyleneamineoxime (^{99m}Tc-HMPAO), provides further evidence of the involvement of specific cortical areas in the pathophysiology of OCD. ^{99m}Tc-HMPAO is a lipophilic molecule that crosses the blood-brain barrier and is converted to a hydrophilic form that is trapped in the brain. Compared with their matched controls, the patients with OCD had significantly increased ^{99m}Tc-HMPAO uptake in the high dorsal parietal cortex bilaterally, in the left posterofrontal cortex, and in the orbital frontal cortex bilaterally (4).

Orbitofrontal cortex is associated with the process of decision making. In OCD patients, there is over activation of the orbitofrontal cortex that leads to uncontrolled thoughts and behaviors. Anterior cingulate cortex is involved in rational cognitive functions, reward anticipation and decision making. Involvement of this area can explain the compulsive

actions seen in OCD patients. Caudate nucleus is a part of basal ganglia that is associated with prevention of over excitation of cortex by the thalamus. In OCD patients, the volume of caudate nucleus is reduced (5), which results in the over excitation of the cortex producing obsessive thoughts.



Behavioral theories:

This theory explains the behavior of OCD patients that tends to relate certain objects or situations with fear and performance of a ritual that helps them to reduce the fear. This pattern of fear and ritual/avoidance may begin after a traumatic experience, usually an emotional one. Under high stress, people are more vulnerable to fear and anxiety. Studies suggest a time period of 3 to 6 months after a stressful experience till the symptoms of OCD begins to appear.

Psychodynamic theories:

Putforth by Sigmund Freud, this theory suggests defensive psychological responses to unconscious impulses.(6)

TREATMENT:

Treatments for OCD include:

- 1) Pharmacotherapy
- 2) Cognitive behavior therapy

PHARMACOTHERAPY:

Antidepressants are the primary drugs used to treat OCD.

Typical antidepressants Tricyclic antidepressant: <ul style="list-style-type: none"> • Clomipramine 	Atypical antidepressants SSRIs (selective serotonin reuptake inhibitor): <ul style="list-style-type: none"> • Fluvoxamine • Fluoxetine • Sertraline • Citalopram • Escitalopram • Paroxetine SNRIs (serotonin norepinephrine reuptake inhibitor) : <ul style="list-style-type: none"> • Venlafaxine MAOIs (monoamine oxidase inhibitors): <ul style="list-style-type: none"> • Phenelzine • Tranylcipramine SARIs (Serotonin antagonist and reuptake inhibitors): <ul style="list-style-type: none"> • Nefazadone
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Secondary drugs:

These are the drugs that augment the effect of antidepressants on OCD. These include:

Drugs to relive anxiety: a) Benzodiazepines b) Buspirone
Antipsychotics: a) Haloperidol b) Pimozide
Mood stabilizers: a) Lithium b) L- tryptophan

TRICYCLIC ANTIDEPRESSANTS**MODE OF ACTION:**

Tricyclic antidepressants block serotonin transporter and norepinephrine transporter, thereby increasing the level of neurotransmitters at the synaptic level. They show no efficacy as dopamine reuptake inhibitors. TCAs also have high affinity as antagonists at serotonin receptors.

Clomipramine:

It is a tricyclic antidepressant which is a very potent serotonergic uptake inhibitor.

Dosage: 25-75mg is given as the starting dose due to the side effects like nausea and vomiting in certain subjects and may need discontinuation. The dosage then can be increased to a maximum daily dosage of 250-300mg.

Adverse effects: Nausea, vomiting, constipation, drowsiness, anorgasmia

Contraindications: To be avoided in the first trimester of pregnancy. (7)

SELECTIVE SEROTONIN REUPTAKE INHIBITORS (SSRIs):**Mode of Action of SSRIs:**

Serotonin is an important neurotransmitter in our system that is utilized by every neuron in our body and has a very drastic effect on our moods. Basically, serotonin acts as controller of signal intensity, i.e., serotonin alters the efficacy of the communication between neurons. To put it in simple words, the higher level of serotonin makes us happier and when the level falls low, we become depressed. SSRIs block the pumps present on the neurons that bring back the serotonin after its action. This results in the prolonged action of serotonin that elevates the mood

a) Fluoxetine:

Fluoxetine is a straight chain phenylpropylamine compound that yields a metabolite desmethyl-fluoxetine and together they inhibit serotonin reuptake. It is useful for long term treatment due to a longer half life.

Dosage: 20mg to 60mg

Adverse effects: Sexual dysfunction, anorexia, nausea, anxiety, asthenia, tremor

Contraindications: Fluoxetine is contraindicated in patients known to be hypersensitive to it and in patients on monoamine oxidase inhibitor therapy (8).

b) Fluvoxamine:

It is a selective serotonin reuptake inhibitor (SSRI) and was the first SSRI to be registered for the treatment of OCD in children.

Dosage: 50mg to 200mg

Adverse effects: Nausea, vomiting, dizziness, insomnia, dry mouth, constipation.

Contraindications: In patients with known hypersensitivity to the drug. Fluvoxamine should not be administered together with MAO inhibitors (9).

c) Sertraline:

Sertraline also belongs to the group of SSRIs.

Dosage: Initial dosage of 50mg that can be increased till a maximum dosage of 200mg once a day.

Adverse effects: drowsiness, dizziness, tired feeling, mild nausea, stomach pain, upset stomach, constipation, dry mouth, changes in appetite or weight

Contraindications: contraindicated in patients with a hypersensitivity to sertraline and in patients taking monoamine oxidase inhibitors (MAOIs). (10)

d) Paroxetine:

Dosage: Initial dosage of 20mg that can be increased up to 60mg per day

Adverse effects: Nausea, somnolence, sweating, tremor, asthenia, dizziness, dry mouth, insomnia and male sexual dysfunction (primarily ejaculatory delay).

Contraindications: Paroxetine is contraindicated in patients who are known to be hypersensitive to the drug and should not be used in combination with MAO inhibitors (11).

e) Citalopram:

Dosage: up to 80mg per day

Adverse effects: Anorgasmia, dry mouth, nausea, drowsiness

Contraindications: Pregnancy, patients taking monoamine oxidase inhibitors (MAOIs). (12)

f) Escitalopram:

Dosage: up to 40mg per day

Adverse effects: Anorgasmia, dry mouth, nausea, drowsiness (13)

SEROTONIN NOREPINEPHRINE REUPTAKE INHIBITORS (SNRIs)

Mode of action of SNRIs: They action is similar to SSRIs. SNRIs inhibit the reuptake of serotonin as well as norepinephrine, thus increasing their free levels at the neuronal synapse and prolonging the duration of action

a) Venlafaxine:

Dosage: up to 225mg per day

Adverse effects: Sexual dysfunction, nausea, somnolence, dry mouth

Contraindications: Patients with glaucoma, heart disease, hypertension and in pregnant women. (14)

MONOAMINE OXIDASE INHIBITOR (MAOIs)

Mode of action of MOAIs: They are chemicals that inhibit the action of monoamine oxidase enzyme family. They have been reserved the last line of treatment for OCD due to their low therapeutic index

and potentially lethal dietary and drug interactions. They prevent the breakdown of serotonin in the body in general and thus increases the serotonin level. But they are least prescribed due to their myriad of drug-drug and food-drug interaction.

a)Phenelazine:

Dosage: up to 105mg per day

Adverse effects: Dizziness, blurry vision, dry mouth, headache

Contraindications: Patients with pheochromocytoma, congestive cardiac failure, liver disease (15)

b)Tranlycpromine:

Dosage: Up to 30mg per day

Adverse effects: Anxiety, nervousness, irritability, anorexia

Contraindications: Patients with cardiovascular diseases, pheochromocytoma, psychosis (16)

SEROTONIN ANTOGONIST AND REUPTAKE INHIBITOR (SARIs)

Nefazadone: Dosage: up to 300mg twice daily

Adverse effects: Dry mouth, sedation, nausea, dizziness

Contraindications: Patients with cardiovascular diseases, psychosis (17)

COGNITIVE BEHAVIORAL THERAPY:

Since its introduction, behavioral therapies for OCD has undergone many developments, thanks to various eminent therapists like Isaac Marks, Edna Foa etc. These techniques require at least 10-20 hrs of sessions with a skilled therapist and a fully cooperative patient.

Behavioral therapies for OCD can be divided into two categories:

- a) Exposure techniques
- b) Blocking and punishing techniques

Exposure techniques aim at exposure and response prevention where the subject will be exposed to a situation that will create a fear in him, urging him to carry out a ritual or avoid the situation but he will not be allowed to do so. This will cause a short term anxiety but is very effective in breaking the cycle of compulsions following obsessions. Usually this technique is practiced in the presence of a therapist and the patient is initially asked to list out the situations which provokes obsessional anxiety. Then the patient is exposed to his fearful situations. The progress depends on how well the patient can control his compulsive behavior. But if the exposure to the obsessional fears cannot be created in the therapist's office, then a technique called 'imaginal' exposure is practiced, where the obsessional thoughts are triggered by various imaginary scenes.

Blocking and punishing techniques include aversive training and thought stopping. The procedure involves production of a strong stimulus that will interfere with the ongoing thought process associated with obsessions.

ELECTROCONVULSIVE THERAPY:

This treatment remains experimental in case of OCD due to controversies relating to the need for such a treatment and is best avoided. Moreover, there is no evidence that ECT is beneficial in treating OCD even though some clinicians have reported the successful use of ECT in severe OCD.

PSYCHOSURGERY:

Psychosurgeries for OCD help to reduce the distress caused by obsessive thoughts rather than disappearance of the disease. Patients have shown excellent response and OCD is the second best responder to psychosurgeries, the first being sexual perversions. The procedures include prefrontal leucotomy, transorbital leucotomy, anterior cingulotomies and orbital leucotomy. But certain criteria must be met before conducting psychosurgery as a treatment for OCD. The illness must have persisted for more than five years and all other possible treatments must have been attempted. It's the least sort after treatment due to its irreversibility. Severe adverse effects like hemorrhage, seizures, apathy and memory loss also restricts the practice of psychosurgery.

Differential Diagnosis:

- a) Tourette's syndrome: It's an acute or chronic tic disorder characterized by motor and vocal tics. More than 30% of the affected individuals meet the diagnostic criteria for OCD. These two disorders seem to have almost the same age of onset and symptoms.
- b) Generalized anxiety disorder (GAD): Patients present with anxiety over daily life situations which are often openly admitted, unlike OCD patients who keep their worry to themselves. The co morbid disorders shared by GAD and OCD include social phobia and panic disorder.
- c) Temporal lobe epilepsy (TLE): Patients with temporal lobe epilepsy often present with personality disorders and one of the commonest associated personality disorders is OCD. TLE patients display the symptoms of OCD at a higher rate than the subjects without TLE.
- d) Other Psychiatric conditions: Psychiatric conditions in the differential diagnosis of OCD include schizophrenia, obsessive

compulsive personality disorders and depressive disorders.

CONCLUSION:

This review details the various theories in the pathophysiology of OCD and dwelled on the treatment of OCD. The mainstay of therapy for OCD is cognitive behavioral therapy and pharmacotherapy. Despite the wide array of drugs available, OCD is not controlled by 1/3RD of the subjects. The SSRIs, SNRIs and SARIs along with tricyclic antidepressants and MAOIs are the major group of drugs used. Accessory drugs include benzodiazepines, buspirone, haloperidol, lithium etc.,

ACKNOWLEDGEMENT: NIL

CONFLICT OF INTEREST: NIL

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