Review Article

Obsessive compulsive disorder (ocd) as a severe mental health disorder: A concise review of management with radiosurgery for intractable disease

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Abstract

Obsessive Compulsive Disorder (OCD) is a mental health disorder with characteristic features including uncontrollable, reoccurring thoughts referred to as obsessions, and excessive urges to perform repeated certain routines referred to as compulsions. Affected patients may suffer from tics, anxiety, negative social behaviours and self mutilation. Symptoms of patients may be intrusive, anxiety-provoking, and rather distressing which may significantly compromise both social and occupational functioning. Deterioration in quality of life may occur as a consequence of unemployment, marriage failure, and maladjustment in familial relationships. Initial management of OCD may include exposure and response prevention, cognitive-bahravioural-therapy, and pharmacological agents such as selective serotonin reuptake inhibitors and tricyclic antidepressants. These management strategies may be effective for the majority of patients suffering from OCD. However, approximately 20% of patients have refractory OCD unresponsive to first-line therapies and a subgroup of patients unresponsive to first-line therapies suffer from severe debilitating symptoms referred to as intractable OCD. Radiosurgery has a long history as an excellent radiotherapeutic modality for management of several intracranial disorders. Radiosurgical or gamma capsulotomy technique involving discrete, circumscribed lesions in white matter of the anterior limb of the internal capsule has been introduced by the Swedish neurosurgeon Lars Leksell. Gammaknife Radiosurgery (GKRS) system has been used as a viable alternative to open surgical anterior capsulotomy procedures and gained popularity and widespread acceptance with accumulating evidence from several centers worldwide. Herein, we provide a concise review including the definition, epidemiology and symptomatology of OCD, patient selection criteria, and management options with focus on radiosurgery.

Introduction

Obsessive Compulsive Disorder (OCD) is among the most important psychiatric disorders significantly deteriorating the mental health of affected patients along with severe consequences such as unemployment, marriage failure, and maladjustment in familial relationships. Patients suffer from substantial impairment in their quality of life. Available first-line therapeutic strategies including exposure and response prevention, cognitive-bahravioural-therapy, and pharmacological agents such as selective serotonin reuptake inhibitors and tricyclic antidepressants may result in clinical improvement in majority of patients, however, approximately 20% of patients have refractory OCD unresponsive to first-line management, and a subgroup of patients unresponsive to first-line therapies suffer from severe debilitating symptoms referred to as intractable OCD. No consensus exists for management of patients with intractable OCD and treatment decisions

are typically based on retrospective data and institutional experiences. As a viable alternative to open surgical anterior capsulotomy procedures, radiosurgery has been introduced with the pertinent goal of generating relatively smaller and probably safer lesions without the need for craniotomy, and has gained popularity and widespread acceptance around the globe. Herein, we provide a concise review including the definition, epidemiology and symptomatology of OCD, patient selection criteria, and management options with focus on radiosurgery. This article has been intended to provide an overview of OCD, and eminent articles on radiosurgery for OCD have been reviewed.

Definition of OCD, epidemiology, and symptomatology

OCD is a mental health disorder with characteristic features including uncontrollable, reoccurring thoughts referred to as obsessions, and excessive urges to perform repeated certain routines referred to as compulsions. Affected patients may suffer from tics, anxiety, negative social behaviours and self mutilation. Worldwide prevalence for OCD ranges between 1.2% and 3.9% [1-6]. While symptoms of OCD may be manifested at any age, typical symptomatology is generally exhibited about the age of 30 years [6]. Symptoms of patients may be intrusive, anxiety-provoking, and rather distressing which may significantly compromise both social and occupational functioning. Hospitalization may be required for some afflicted patients. Deterioration in quality of life may occur as a consequence of unemployment, marriage failure, and maladjustment in familial relationships [7,8].

Initial management of OCD

Initial management of OCD may include exposure and response prevention, cognitive-behavioural-therapy, and pharmacological agents such as selective serotonin reuptake inhibitors and tricyclic antidepressants [9-17]. These management strategies may be effective for the majority of patients suffering from OCD [17]. However, approximately 20% of patients have refractory OCD unresponsive to first-line therapies [16-21] and a subgroup of patients unresponsive to first-line therapies suffer from severe debilitating symptoms referred to as intractable OCD [20-23]. There is no standard management for intractable OCD. In this context, psychosurgery may be considered for this selected subgroup of patients.

Definition of psychosurgery

Neurosurgical management of mental disorders with psychosurgery refers to destruction of histologically normal brain tissue in order to achieve symptomatic relief for afflicted patients suffering from debilitating and intractable psychiatric disorders who have exhausted other therapeutic options [23,24]. Cingulotomy, subcaudate tractotomy, limbic leucotomy, capsulotomy, magnetic resonance-guided focused ultrasound, and neurostimulatory interventions such as deep brain stimulation and transcranial magnetic stimulation are among the utilized procedures [20,23-40]. Nevertheless, thorough consideration of the ethical aspect is a critical issue for implementation of these procedures with some controversies and potential restrictions in different regions around the globe [41-46].

Radiosurgery as part of psychosurgery

Radiosurgery in the form of Stereotactic Radiosurgery (SRS), Stereotactic Ablative Body Radiotherapy (SABR) and Hypofractionated Stereotactic Radiation Therapy (HFSRT) may be judiciously utilized for focused radiotherapeutic management of several CNS disorders and several other tumors throughout the human body [47-67]. Rationale of radiosurgery is delivery of high and ablative doses to well defined targets while sparing surrounding normal tissues. In the context of intractable OCD management, radiosurgical or gamma capsulotomy technique involving discrete, circumscribed lesions in white matter of the anterior limb of the internal capsule has been introduced by the Swedish neurosurgeon Lars Leksell [23,24,68-70]. Patient selection for radiosurgical management of OCD is a critical issue. Decision to treat patients with OCD using radiosurgery should be made after thorough multidisciplinary collaboration and consensus of experts from several disciplines including psychiatry, neuropsychology and neuropsychiatry, radiation oncology, neurology, and neurosurgery. A strict guideline for patient eligibility includes several qualifications including the following criteria [24,70]:

- Patients meeting the diagnostic criteria for OCD
- Duration of OCD for more than 5 years
- Profound suffering from OCD as scored on the Yale-Brown Obsessive-Compulsive Scale (Y-BOCS) of at least 26
- Disease severity causing significant reduction in the patient’s psychosocial functioning, as revealed by a score of 50 or lower on the Global Assessment of Functioning (GAF) scale
- Failure to yield appreciable benefit from pharmacologic and behaviour therapies employed systematically alone or in combination for a duration of at least 5 years
- Management of any accompanying comorbid psychiatric condition (if present) with proper trials of first-line therapies
- Prognosis being considered grim without incorporation of neurosurgical intervention
- Patient’s Informed consent
- Patient’s compliance with participation in preoperative assessment and postoperative rehabilitation programs
- Referring physician’s willingness for postprocedural long-term patient management.

Management of intractable OCD with radiosurgery

Radiosurgery has a long history as an excellent radiotherapeutic modality for management of several intracranial disorders [68,71]. Gammaknife Radiosurgery (GKRS) system has been introduced as a viable alternative to open surgical anterior capsulotomy procedures with the
pertinent goal of generating relatively smaller and probably safer lesions without the need for craniotomy, and has gained popularity and widespread acceptance supported by accumulating evidence from several centers worldwide [20,70,72–98]. A consistent finding of the relevant literature is that radiosurgery may serve as a viable alternative therapeutic option for intractable OCD management despite the need for further supporting evidence with data on long-term safety and efficacy. An international, multicenter, retrospective cohort study on gamma ventral capsulotomy (GVC) for severe, medically refractory OCD reported that GVC may serve as a reasonable therapeutic approach for management of selected patients with OCD [75]. Another study assessing GVC for intractable OCD revealed that 31 out of the total 55 patients had improvement, and the authors concluded that GVC could be utilized as an effective radiosurgical procedure for many treatment refractory OCD patients [76]. Kondziolka, et al. evaluated the treatment results of bilateral radiosurgical anterior capsulotomy for severe medically refractory OCD [82]. There was no morbidity after GKR with all patients returning immediately to baseline function, and the authors concluded that GKR provides improvement of OCD behavior with no adverse effects [82]. A pilot study by Taub, et al. revealed that GVC did not result in profound cognitive deficits, and improvements have been observed in some cognitive domains [83]. Vigilance is required in meticulous selection of eligible patients for this highly sophisticated treatment procedure given several aspects of management including ethical issues and untowards adverse effects [99,100].

Conclusion and future perspectives

There is growing body of evidence suggesting the utility of radiosurgery for OCD management. Critical aspects of treatment include meticulous selection of eligible patients for this highly sophisticated therapy procedure, ethical considerations, and incorporation of relevant long-term safety and efficacy data to justify radiosurgical management. Decision to treat patients with OCD using radiosurgery should be made after thorough multidisciplinary collaboration and consensus of experts from several disciplines including psychiatry, neuropsychology and neuropsychiatry, radiation oncology, neurology, and neurosurgery. Future studies may be required for refining and optimization of the radiosurgical technique in terms of delivered doses and precise targeting for an improved therapeutic ratio.

References


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