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Tardive Dyskinesia: A Misconstrued Diagnosis

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Abstract

Tardive dyskinesia (TD) is a common and potentially irreversible side effect of dopamine blocking agents, most often antipsychotics. It is often socially and sometimes also physically disabling. The clinical picture can be divided into orofacial, limb-truncal, and respiratory dyskinesia.TD is a movement disorder characterized by involuntary, repetitive, and patterned tonic muscle contractions which causes Involuntary clenching,Protrusion of tongue, Opening or deviation of the jaw, Abnormal posturing of the lingual or labial musculature.Most of the time oral TD does not cause pain or physical disabilities but if patients are conscious of their dyskinetic movements, social disability is often present. Patients may feel embarrassed, anxious, or depressed when they notice that others observe their dyskinetic movements and the presence of obviously odd movements can lead to stigmatization. Feelings of shame are a common reason for seeking help. One study showed that patients with orofacial dyskinesia are deemed less socially acceptable. Tardive dyskinesia can occur as a result of genetics, neuroleptics & other drugs, trauma and Idiopathic. Management majorly is categoried into 4 sections. They are pharmacotherapy, prosthodontic therapy, chemodenervation and neurosurgery.

Keywords: Tardive dyskinesia (TD), Dopamine receptor blocking agent (DRBA), Second generation antipsychotics (SGAs).

Introduction

Several movement disorders that affect the face and mouth muscles affect people all over the world. A serious neurological adverse effect of long-term dopamine-blocking medication, often antipsychotics, is

tardive dyskinesia (TD). Orofacial, limb-truncal and respiratory dyskinesia are three categories of TD. The bucco-linguo-masticatory triad is the key indicator of orofacial dyskinesia. This includes uncontrollable tongue, jaw, lip, or face motionssuch as protruding, twisting, or curling the tongue; chewing; lateral jaw movements;pouting; puckering the lips; uncontrollable facial tics; and excessive eye blinking. The orofacial variety makes up around 80% of instances of TD, making it the most prevalent kind (Rapaport et al., 2000). The effects of severe oral dyskinesia may include dental issues that worsen to ulceration, muddled or incomprehensible speech, difficulty swallowing and eating. Patients may experience feelings of embarrassment, anxiety or depression when others see their dyskinetic movements, and the existence of visibly bizarre motions can result in stigmatisation.[1,2,7]

Five years after the introduction of the first DRBA, chlorpromazine, TD was first described in the 1950s. The term "TD" was first used in 1964 by Faurbye et al, who underlined that the incidence of TD increased with chronic exposure. Sigwald et al offered the first comprehensive descriptions. The name TD has been used to designate to the TS that manifests with fast, repetitive, stereotypic movements involving the oral, buccal, and lingual regions.Because it tends to be recurrent as opposed to random, it has also been referred to as tardive stereotypy. Rhythmical chorea, oral-buccal-lingual dyskinesias, and classic TD are further synonyms. Incidence rates fluctuate annually between 5% (in the younger group) and 12% (in the older group). Typically, TD affects at least 20% of patients receiving conventional neuroleptic therapy, and it is anticipated that 5% of patients may experience TD after one year of receiving neuroleptic therapy.[3,4]

The biggest constant risk factor for TD has been age. Older patients, especially women, have higher incidence and worse remission rates.TD prevalence even varied by geographical region, ranging from 17.3% in Asia to 31.8% in Australia, Africa, the Middle East and 9.6% in India. The main explanation for tardive dyskinesia is the DA receptor supersensitivity hypothesis, which is based on striatal DAergic hyperfunctioning. The fundamental hypothesis is that basal ganglia and limbic forebrain may be hyperactive due to DA or another DA-related component. The postsynaptic DA receptors may be more numerous or more effective in this condition of relative excess DAergic activity, and this component has been crucial to the DA hypothesis.The mechanism behind this result is assumed to be an adaptive response involving an increase in the number of DA receptors following neuroleptic inhibition of DA receptors over an extended period of time.[5,6]

Case Report

A 65 Yrs oldpatient complained of difficulty in chewing food due to loss of teeth.

Medical history: Diabetic since 20 years and under medication. H/O head trauma more than 40 years ago. Loss of consciousness for one week and hospitalisation post incident. History of the abnormal involuntary movement post head trauma. Known case of Psychiatric illness since 6-7 years and is under medication.

Extra oral examination revealed no gross asymmetry, Concave profile, Type IV skin type (Fitzpatrick scale), Abnormal repetitive jaw movements (Unaware).The Abnormal Involuntary Movement Scale, a 12-item clinician-rated scale was used to assess severity of dyskinesias (specifically, orofacial movements and extremity and truncal movements) in patients taking neuroleptic medications. Additional items assess the overall severity, incapacitation, and the patient's level of

awareness of the movements, and distress associated with them. The AIMS has been used extensively to assess tardive dyskinesia in clinical trials of antipsychotic medications. Due to its simple design and short assessment time, the AIMS can easily be integrated into a routine clinical evaluation. The scale has 5 ratings.0,1,2,3,4 which range from none to severe.

Intra Oral examination:-Mildly resorbed maxillary arch and Moderately resorbed mandibular arch

Dental Diagnosis: Completely Edentulous Maxillary and Mandibular arches with adequateinterarch distance having Class I ridge relation with Referral to Department of Psychiatry, Bapuji Hospital, Davangere where a Medical Definitive Diagnosis ofDRUG INDUCED TARDIVE DYSKINESIA was given. The treatment plan included Fabrication of Removable Maxillary and Mandibular Complete Dentures as patient denied fixed type of treatment due to economic reasons. Preliminary impressions of the maxillary and mandibular edentulous ridges were made with an irreversible hydrocolloid impression material (Neocolloid, Zermack clinical, Italy). The impressions were washed and poured with the dental plaster. Wax spacers were adapted on the primary casts and custom trays were fabricated. The custom tray was prepared with auto-polymerizing acrylic resin (DPI-RR cold cure, dental products of India, the Bombay trading corporation limited) for making secondary impression. The secondary impression was made using green stick compound for border molding (DPI pinnacle tracing sticks, Bombay, India) and zinc oxide impression paste as impression material (DPI, dental products of India, the Bombay trading corporation limited). Beading and boxing was done and the master cast was made with dental stone type III (kalastone, kalabhai dental private limited); and wax occlusal rims were made over the temporary denture bases fabricated by auto polymerizing resin (DPI-RR cold cure, dental products of India, the Bombay trading corporation limited). Jaw relations were recorded and the maxillo-mandibular records were transferred to a mean value articulator. Teeth arrangement was done following the 'biomechanical principles of arrangement of teeth in edentulous patients'. Given the stereotypical movements, the vertical dimension component of the jaw relations was verified at the try in verification stage. Ultimately, a balanced occlusal scheme was designed in an effort to permit a definitive and maximal intercuspal position with a bilateral balance in excursive movements. Try-in verification was followed by laboratory steps of denture processing with heat polymerizing acrylic resin (Trevalon, Dentsply, Gurgaon, India), and then the processed and finished denture was inserted and evaluated for esthetics retention and function particularly due to the patient's inherent tendency of uncontrolled orofacial movements. The interferences in the denture were eliminated and denture was given to the patient. Post-insertion instructions were comprehensively explained to the patient regarding its maintenance, recall, nutrition, and hygiene.

Figure 1: Pre-0perative Views

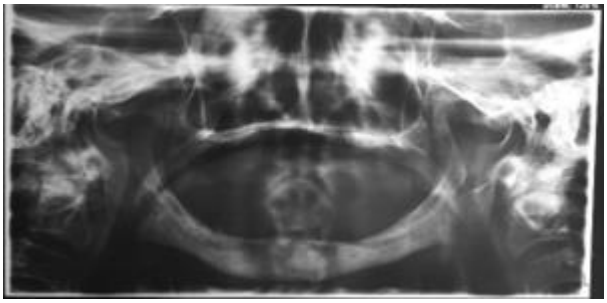


Figure 2: OPG

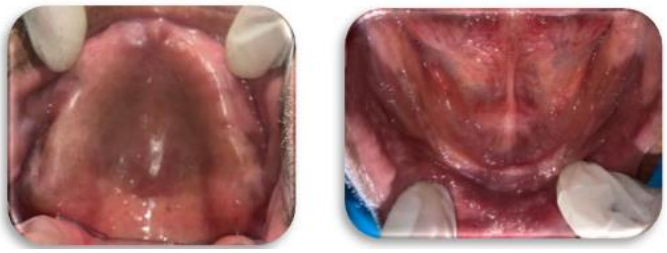
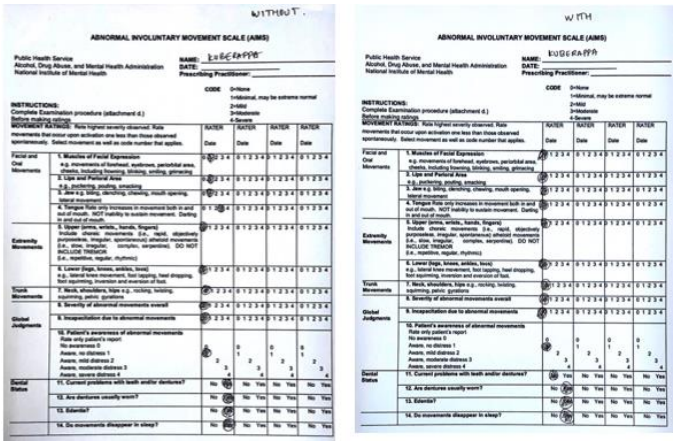


Figure 3: Intra-Oral Views

Figure 4: Post-0perative Views

Figure 5: Tongue Protrusion



Aims Before & After Treatment. Note The Reduction In Scores.

Discussion

Attempts to establish the jaw relationship at the terminal hinge position/retruded contact point failed because the patient found that position uncomfortable. The mandible resisted aggressively and persistently when forced into the terminal hinge position. Instead, the most pleasant and effective therapeutic mandibular position was shown to be several millimetres anterior to the most retruded position. The difficulty with this patient was establishing, documenting, and verifying his edentulous maxillo-mandibular relationship records in preparation for mounting the castings on the articulator. Anatomical features such as residual alveolar ridge paralleling, face height measures, phonetics, and aesthetics were useful in obtaining an approximated occlusal vertical dimension. The most effective occlusal vertical dimension for minimising orofacial dyskinesia appears to be excessive. The occlusal prosthesis's excessive vertical dimension may increase both conscious and unconscious proprioception by extending muscle spindles and changing the angle of the joints while the dentures are in occlusion. Before a final choice on what was deemed to be the best jaw records for the patient, considerable patience and time were required. The vertical dimension component of the jaw relations was established during

the trial verification step, based on the stereotyped motions.Semi-anatomic teeth were chosen for the evident benefit of keeping and directing the mandible in the terminal hinge axis position, which is a key requirement for the unique motions. Ultimately, a balanced occlusal scheme was created in order to provide for a definite and maximum inter-cuspal position with bilateral balance in excursive motions. The teeth are put in harmony with the specific patient's oral musculature, particularly the tongue, in a complete denture. In this example, appropriate denture fabrication entirely eliminated the dyskinesia. A Nikon camera was used to make video recordings of the patient's mandibular motions without dentures, which were then used as a teaching and demonstration tool for both the patient and his family.The resumption to movements was accompanied by the removal of the dentures, implying that in this case, correctly planned and constructed complete dentures contributed to the cessation of his spontaneous motions. Of fact, any of the variables of optimal complete denture therapy may be blamed for this patient's complete lack of uncontrolled movements. The patient and his family were very delighted with the treatment's end result. In what was a highly uncomfortable circumstance, this specific patient's dramatic and apparent improvement enabled him and his family to subjectively recognise a far-reaching improvement in his quality of life.Considering this, the rehabilitation of this specific patient can be used to deduce the causal association between removable prosthesis and edentulous dyskinesia, which is underrepresented in the literature. Yet, while excessive tongue and mandibular movements are sure to degrade the denture-wearing experience, it may be claimed that stable prostheses may provide a space for spatial orientation, which may in turn benefit the TD's symptoms. The mechanism of this predicted reaction is undoubtedly unknown, and it is impossible to forecast whether this patient's care may be duplicated in a predictable fashion in other individuals with comparable TD indications and symptoms.

Conclusion

In the lack of strong data demonstrating the potential advantages of routine prosthodontic treatment, a case should be made for the inclusion of preventive dental programmes and routine dental care as part of the regimen of all patients at risk of developing dyskinesia. While the condition is medically mandated, the dental clinician may be the first health practitioner to notice uncontrolled movements that may indicate TD, particularly those affecting the orofacial complex. A candid discussion with the patient, followed by a referral to his or her doctor, can result in an early diagnosis and appropriate care of this movement disorder. The clinician's expertise and empathy are key components in the therapy of dyskinetic individuals.

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Legends Tables

PRODUCT NAME	DELIVERY	COMPOSITION
OSSABASE-HA	GRANULES	HA
OVIS BONE-HA	GRANULES	HA
COLLAOSS (BLOCK), OOSSBONE COLLAGEN	PLUG	HA (90%±5%) & collagen (10%±5%)
COLLAOSS (PUTTY)	GRANULE	HA (90%±5%) & collagen (10%±5%)
COLLAOSS (SYRINGE)	INJECTABLE	HA (90%±5%) & collagen (10%±5%)
DUALPOR COLLAGEN D-PUTTY	BLOCK	HA (60%) +bovine atelo collagen (0.3%) & distilled water (39.7%)
DUALPOR COLLAGEN D	INJECTABLE	HA (60%) +bovine atelo collagen (0.3%) & distilled water (39.7%)

Table 1: Commercially available HA based Biomaterials

PRODUCT NAME	DELIVERY	COMPOSITION	PROPERTY
Boncel-Os	Granule	β- TCP (70%) + HA (30%)	Biocompatible, Osteoconductive Excellent wettability
BoneSigma BCP	Granule	β- TCP (40%) + HA (60%)	Osteoconductive properties Long-term volume stability
DualPor COLLAGEN D-PUTTY	Block	β- TCP (40%) + HA (60%) + bovine collagen (5.5%)	Biocompatibility, Bioabsorbable Easy handling and moldable, Hemostasis and anti-adhesion effect

FRABONE	Granule	β- TCP (40%) + HA (60%)	Biocompatibility, Bioactive Osteoconductivity, Osteoinductivity Mechanical strength Structural feature reserves stable room and filled up with vessels and new bone material, resulting in faster regeneration
FRABONE (Inject)	Injection	β- TCP (40%±5%) + HA (60%±5%) + coated with hyaluronic acid	Highly biocompatible and bioresorbable due to hyaluronic acid Osteoconductivity, Osteoinductivity High mechanical strength Structural feature, Moldability Injectability
GENESIS-BCP	Granule	β- TCP (40%) + HA (60%)	High mechanical strength Highly biocompatible
MBCP Plus	Granule	β- TCP (80%) + HA (20%)	Permeable, Resorbable, Hydrophilic Bioactive, Osteoconductive Regeneration
NEW BONE	Granule	β- TCP (80%) + HA (20%)	Osteoconductive synthetic bone graft, Highly resorbable due to 80% β-TCP, Easy manipulation
OSTEON	Granule/syringe	β- TCP (30%) + HA (70%)	Osteoconductive
OSTEON II	Granule/ syringe	β- TCP (70%) + HA (30%)	Highly resorbable due to higher β-TCP content Easy manipulation, Excellent wettability, Osteoconductive
OSTEON III	Granule/ syringe	β- TCP (40%) + HA (60%)	Biocompatible, Osteoconductive
OSTEON III Collagen	Cylinder	β- TCP (40%) + HA (60%) + type I collagen (>95% porcine tendon collagen)	Easy manipulation Excellent wettability

Ovis BONE BCP	Granule	β- TCP (80%) + HA (20%)	Osteoconductive, Excellent wettability Easy manipulation Biocompatibility and great bioactivity
TOPGEN-S	Granule	β- TCP (80%) + HA (20%)	Excellent hydrophilicity Osteoconductive

Table 2: Commercially available biphasic tricalcium phosphate grafts

PRODUCT NAME	**DELIVERY**	**COMPOSITION**	**PROPERTY**
BoneSigma TCP	Powder	β-TCP 100%	Osteoconductive High resorption rate: Rapid osseointegration and recovery in dental implants
Excelos Inject	Injectable	β-TCP 100%	Hemostasis and injectable by poloxamer-based hydrogel High moldability Osteoconductive High resorption rate Space maintaining for new bone formation
Excelos (TCPGLD)	Powder	β-TCP 100%	Osteoconductive Faster absorption and biodegrade rate Space maintaining for new bone formation
MEGA-TCP	Powder	β-TCP 100%	Biocompatibility Biodegradable
Sorbone	Powder	β-TCP 100%	Osteoconductive High resorption rate Biocompatibility Easy handling
SynCera	Powder	β-TCP 100%	Osteoinduction >70% new bone formation

Cerasorb M	Powder	β-TCP 99%	99% resorption Optimal microenvironment for osteoblast adhesion proliferation and Subsequent bone remodeling
TCP Dental	Granule	β-TCP 99%	Osteoconductive Early resobable and angiogenesis

Table 3: Commercially available Tricalcium phosphate based grafts