having statistically significant changes in aggression (-1.57, p=0.012) and depression (-2.36, p<0.001), but not in anxiety. Patients with Depression had significant changes in depression (-2.08, p<0.001) and anxiety (-1.96, p<0.001) but not in aggression/agitation, while patients with a Schizophrenia spectrum illness had changes in depression alone (-2.33, p=0.008). Sociodemographic variables had no significant impact.
Conclusions. The findings in this study indicate that a short-term progressive muscle relaxation intervention can lead to statistically and clinically significant changes across various symptom domains and in patients with a variety of psychiatric diagnoses, and support the implementation of this non-invasive and budget-friendly exercise.
Funding. No Funding

Pooled Analysis of EPS-Like Symptoms in the EMERGENT Program of KarXT in Schizophrenia

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Introduction. Although atypical antipsychotics have lowered the prevalence and severity of extrapyramidal symptoms (EPS), they still contribute to the overall side-effect burden of approved antipsychotics. Drugs with novel mechanisms without D_2 dopamine receptor blocking activity have shown promise in treating schizophrenia without the side effects of currently available treatments. KarXT (xanomeline–trospium chloride) represents a possible alternative that targets muscarinic receptors. KarXT demonstrated efficacy compared with placebo in 3 out of 3 short-term acute studies and has not been associated with many of the side effects of D_2 dopamine receptor antagonists. Here, we further characterize EPS rates with KarXT in these trials.
Methods. EMERGENT-1 (NCT03697252), EMERGENT-2 (NCT04659161), and EMERGENT-3 (NCT04738123) were 5-week, randomized, double-blind, placebo-controlled, inpatient trials in people with schizophrenia experiencing acute psychosis. Data from the safety populations, defined as all participants who received ³1 dose of trial medication, were pooled. For this analysis, we used a broader definition of EPS-related adverse events (AEs) to encompass any new onset of dystonia, dyskinesia, akathisia, or extrapyramidal disorder reported any time after the first dose of medication. Additionally, EPS were assessed by examining change from baseline to week 5 on the Simpson-Angus Scale (SAS), Barnes Akathisia Rating Scale (BARS), and Abnormal Involuntary Movement Scale (AIMS).
Results. A total of 683 participants (KarXT, n=340; placebo, n=343) were included in the analyses. The rate of treatment-emergent AEs (TEAEs) associated with EPS was 3.2% in the KarXT group vs 0.9% in the placebo group. The most commonly reported TEAE was akathisia (KarXT, 2.4%; placebo 0.9%); half of possible akathisia cases in the KarXT group (4/8 TEAEs) were from a single US site, considered by the investigator to be unrelated to trial drug, and resolved without treatment. Overall rates of akathisia TEAEs deemed related to trial drug were low (KarXT, 0.6%; placebo 0.3%). Dystonia, dyskinesia, and extrapyramidal disorder TEAEs were reported by only a single subject each (0.3%) in the KarXT arm. All reported TEAEs were mild to moderate in severity. KarXT was associated with no clinically meaningful mean±SD changes from baseline to week 5 on the SAS (-0.1 ±0.6), BARS (-0.1±0.9), or AIMS (0.0±0.7).
Conclusions. The incidence of EPS-related TEAEs with KarXT was low in comparison to those observed in similar trials of antipsychotics (D_2 dopamine receptor antagonists), although head-to-head studies have not been completed. Moreover, KarXT was not associated with increased scores on EPS scales (SAS, BARS, AIMS) across 5 weeks of treatment. These results, combined with the robust efficacy of KarXT in trials to date, suggest that KarXT's novel mechanism of action may provide therapeutic benefit in the absence of EPS frequently associated with currently available antipsychotics.
Funding. Karuna Therapeutics

Assessment of Underdiagnosis of Tardive Dyskinesia by Geographic Region, Social Determinants, and Other Patient Characteristics

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Introduction. Tardive dyskinesia (TD) is a hyperkinetic movement disorder associated with antipsychotics (APs).
Objective. To estimate TD diagnosis rates across geographic regions of the United States (US) among adults who use APs.
Methods. In this retrospective cohort study, patients with ≥1 AP claim (≥30-day supply) followed by TD diagnosis (index date) aged ≥18 years at index date with ≥12 months of continuous insurance eligibility after index date and geographic location information were identified in the IBM MarketScan© commercial insurance database (2012– 2019). Additional information was collected from the US census, the Internal Revenue Service, and the Centers for Medicare & Medicaid Services. . Observed TD diagnosis rates were estimated by metropolitan statistical area (MSA; ie, a major city and surrounding geographic areas linked by socioeconomic factors with ≥50,000 individuals). A weighted multivariable linear regression model was used to calculate

https://doi.org/10.1017/S1092852924001809 Published online by Cambridge University Press

expected TD diagnosis rates per 1000 patients with an AP prescription at the MSA level. Estimated and expected TD diagnosis rates were aggregated at the state level. Underdiagnosis of TD was defined as the observed TD diagnosis rate being lower than the expected TD diagnosis rate.
Results. Among 572,314 people who met inclusion criteria, the mean observed TD diagnosis rate across 341 MSAs was 3.10 per 1000 patients with an AP prescription; 86 (25.2%) MSAs had no patients with a TD diagnosis. Over 50% of MSAs and states had an underdiagnosis of TD. MSAs with the highest expected TD diagnosis rates were Missoula, MT (5.47), Billings, MT (5.39), and Madison, WI (5.16). MSAs with the highest observed TD rates were Chambersburg-Waynesboro, PA (18.52), Napa, CA (13.70), and San Angelo, TX (13.07). MSAs with the largest negative differences between observed and expected TD diagnosis rates (ie, highest underdiagnosis rates) were Missoula, MT (−5.47), Billings, MT (−5.39), and Gainesville, FL (−4.39). States with the highest expected TD rates were Montana (5.28), Idaho (4.52), and Alaska (4.32). States with the highest observed TD rates were North Dakota (7.09), Idaho (5.85), and New Mexico (5.67). States with the highest underdiagnosis rates were South Dakota (−3.72), Vermont (−3.57), and Montana (−3.21).
Conclusions. Overall, this study showed that TD was underdiagnosed in >50% of US geographic regions. This research highlights opportunities for improved TD recognition in areas with TD underdiagnosis.
Funding. Teva Branded Pharmaceutical Products R&D, Inc.

A Literature Review of Antipsychotic-Associated Obsessive-Compulsive Disorder/ Obsessive Compulsive Symptoms in the Treatment of Schizophrenia

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Introduction. Co-occurrence of Obsessive compulsive symptoms (OCS)/Obsessive Compulsive disorder (OCD) and psychotic disorders is not uncommon affecting approximately 20% of the patients with psychotic disorders. The clinicians sometimes fail to recognize the comorbidity of these two conditions due to the overlapping symptoms and also due to under reporting by the patients until the symptoms become very severe. Timely recognition and treatment of obsessive symptoms are crucial for improving the outcomes of psychotic episodes. Our review aims to study the role of antipsychotics in causing OCD/OCS in schizophrenia. We also discuss the etiologies, pathophysiology, and treatment of OCD/OCS in schizophrenia.
Methods. A comprehensive literature search was conducted on PubMed and Google Scholar to identify relevant articles published between 2013-2023. The different search terms were "(Antipsychotics)", "(OCD in schizophrenia)" with connector AND. All review, case control, cohort, cross sectional, observational studies were included for the literature review. Based on the relevance of the topic and removal of duplicates, we chose 61 articles.
Results. The literature review revealed that several mechanisms could explain the temporal links between OCD/OCS and schizophrenia. Genetic factors, such as SLC1A1, BDNF, DLGAP3, and GRIN2B genes, have been studied. Serotonergic dysfunction in the cortical, striatal, and thalamic networks has been proposed by OCD pathogenic theories, supported by the therapeutic effects of SSRIs and CBT. Antipsychotic medications, particularly Clozapine, have been associated with a higher prevalence of OCS/OCD during treatment. Some second-generation antipsychotics, like risperidone and olanzapine, have also been linked to new-onset OCS. Treatment options for OCS/OCD in schizophrenia include SSRIs, atypical antipsychotics like Aripiprazole, Amisulpride, or Lamotrigine, CBT, and ECT.
Conclusion. Several studies have examined the link between the presence of OCS in relation to the use of antipsychotics. Among the APAs, the frequency of OCS/OCD is more in the patients using antipsychotics which have more anti serotonergic properties as compared to the ones having more anti dopaminergic properties. Of the second-generation antipsychotics, Clozapine, Olanzapine and Risperidone are the ones being documented most frequently, with clozapine being the most frequent. A dosage-dependent side effect may also be present based on correlations between OCS severity, dose, serum levels, and treatment duration. Various treatment approaches have been suggested, but further research is needed to determine the most effective strategies for managing OCS/OCD in schizophrenia. Clinicians must be aware of the potential comorbidity of these conditions to provide better care and improve patient outcomes.
Funding. No Funding

https://doi.org/10.1017/S1092852924001809 Published online by Cambridge University Press