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β-Blockers for Autism—*Help* or *Hindrance*?

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ABSTRACT *~ A renewed interest in the use of* β*-blockers for neurodevelopmental disorders has recently resurfaced, notably as an addition to the limited psychopharmacological armamentarium of autism spectrum disorders (ASD). In this clinical perspective, authors decently argue this use could be advantageous and multi-folded for this population.* Psychopharmacology Bulletin. *2023;53(4):57–59.*

For better or worse, β-blockers are currently *not* FDA approved for any psychiatric indication. The rampant off-label heretofore use of β-blockers on clinical grounds seems to have fallen into disfavour with the lavish introduction of newer more nuanced psychotropic agents on market.[1] That said, a renewed interest in the use of β-blockers for neurodevelopmental disorders has recently resurfaced, notably as an addition to the limited psychopharmacological armamentarium of autism spectrum disorders (ASD). This use could be advantageous and multi-folded.

Core and Behavioural Facets

A recent review[2] indicated that the lipophilic β-blocker propranolol holds promise for emotional, behavioural, and autonomic dysregulation (EBAD) and cognitive performance in ASD. Two studies from a single cohort of eight adult patients have addressed the use of beta blockers for ASD-associated impulsivity and aggression. Both were open trials without controls, and both demonstrated remission of tantrums, property destruction, and self-injurious behavior in one-half the patient samples after 6 weeks of treatment with the non-selective beta blockers propranolol or nadolol. These trials revealed subtler improvements in speech and social behavior in all eight subjects, consistent with controlled trials

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demonstrating improvement of word fluency and conversational reciprocity with propranolol in ASD.[3] It appears that the cognitive benefits of propranolol may be due to altered functional connectivity through modulation of network-level processing in the brain. Propranolol has been shown to alter functional network properties in the default mode network (DMN) in individuals with ASD during passive rest and in language regions during the performance of a phonological processing task.[4]

Comorbid Social Anxiety Disorder

Social anxiety disorder (SAD) is especially common, with prevalence estimates reported to be as high as 50%-substantially higher than estimates of 7–13% cited for the non-ASD population[5] Conceivably, β-blockers can help with superimposed SAD that has been tied to poorer social skills, competence and social motivation.

Inappropriate Sexual Behaviours

Moreover, one of the challenging behaviours that emerge with transition into adolescence is the inappropriate sexual behaviours (ISBs) in up to 30%, e.g., masturbation in public, disrobing, inappropriate touching, … etc in tandem with hormonal surge, which is often difficult to accommodate and add to caregivers' distress.[6] This is further compounded in this population by deficits in social communication and theory of mind (ToM) which lie at the core of ASD with executive dysfunction and poor social judgement rendering psycho-education of 'sexuality' difficult to contemplate.[7] In ASD population, ISBs might subserve self-soothing or self-stimming (sensory) functions which tend to maintain these maladaptive behaviours. It might then turn part of routine. Moreover, in ASD population, it might prove alarmingly risky. Lack of education, using inappropriate 'fetish', too excessive masturbation, self-injury during the act, indecent exposure, associated aggression, and forensic repercussions … all can accentuate ramifications of ISBs in ASD and call for action. When pharmacotherapy is indicated, a flimsy evidence-base supports use of β-blockers. Propranolol, at a low dose (10 mg bid) has been reported[8] to help with inappropriate sexual behaviours in an adolescent with ASD. Mechanisms include reduction in central sympathetic outflow, impaired vasodilatation of corpora cavernosa, effects on LH (luteinzing hormone) and testosterone, induction of sedation, and alleged depressogenicity.

Akathisia

ASD is commonly associated with a host of challenging behaviours. Pharmacotherapy is indicated if psycho-social and educational interventions fail.[9] Atypical antipsychotics have the strongest evidence-base so far, with both risperidone and aripiprazole are FDA-approved. Unfortunately, their use is fraught with metabolic and neuro-hormonal side effects. Akathisia is common with both agents and ASD population is typically at heightened risk by virtue of young age and neurodisability. This can be easily overlooked clinically and masquerade as behavioural decompensation running a risk of erroneously increasing AAP dose further exacerbating the whole problem. Since, noradrenergic overactivity has been demonstrated in akathisia, use of β-blockers, commonly propranolol, can successful tackle this serious side effect.[10]

All-in-all, there seems a revamp regarding use of β-blockers in ASD to address both core and behavioural facets as well. Time would definitely tell. ✤

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Conflict of Interests

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