Antipsychotics effects on PR, QRS, and QTc intervals in patients with Wolff-Parkinson-White Syndrome with and without cardiac ablation.

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Introduction

Wolff-Parkinson-White Syndrome (WPW) is a rare ventricular pre-excitation syndrome that occurs due to the presence of an atrioventricular accessory pathway (Alkhatib, 1999). Patients with WPW are more prone to arrhythmias which can be fatal (Qiu, 2018). Different antipsychotics are FDA-approved for the treatment of several psychiatric disorders which increases the possibility of patients with WPW to be exposed to antipsychotics. Unfortunately, the safety of antipsychotics in patients with WPW is yet to be established (Nutting, 2019).

Methods

We conducted a retrospective chart review using a health research network (TriNetX). Fourteen patients with WPW and EKGs before and after antipsychotics were included in the analysis (mean age 40.7 ± 3.8) equally divided between men and women. A Two-tailed T-test for independent means was used to establish statistical differences. Results are reported as mean ± SEM.

Results

In patients with WPW the PR interval did not change before or after antipsychotic intake (Prior; 129.5 ± 6.3; After, 129.8 ± 5.8; P = 0.97). QRS interval also remained stable (Prior; 89.8 ± 4.0; After, 88.57 ± 2.8; P = 0.79) and QTc followed this same pattern (Prior; 449.1 ± 4.9; After, 450.2 ± 6.7; P = 0.89). We compared patients who had cardiac ablation (CA) versus not. Before exposure to antipsychotics, patients with WPW + CA had a longer PR interval than patients with no CA (with CA; 138.8 ± 8.0; no CA; 118.67 ± 8.5; P = 0.11). Since this difference did not reach statistical significance, we expanded our cohort, including some patients that were not exposed to antipsychotics. This larger cohort showed significance (with CA; 156.2 ± 7.9; no CA; 121.5 ± 6.1; P = 0.03). PR interval continued to show this difference after exposure to antipsychotics (with CA; 141.5 ± 6.4; no CA; 117.33 ± 6.6; P = 0.02). QRS also showed differences based on CA before antipsychotic treatment (with CA; 80.7 ± 2.9; no CA; 102 ± 5.7; P = 0.004). After antipsychotic exposure, there was a difference that did not reach significance (with CA; 84.5 ± 3.4; no CA; 94 ± 4.0; P = 0.09). QTc was not impacted by either CA or antipsychotic intake.

Cardiac ablation	Antipsychotic	Antipsychotic dose in mg/d
Yes	aripiprazole	1-2 mg
Yes	aripiprazole	10 mg
No	aripiprazole	5 mg
No	Clozapine	100 mg
No	Loxapine	100 mg
No	Risperidone	6 mg
Yes	Chlopromazine	10-40 mg
Yes	Risperidone	0.5 mg
Yes	Quetiapine	50 mg
No	Quetiapine	25 mg
Yes	Quetiapine	200 mg
Yes	Quetiapine	300 mg
Yes	Quetiapine	unknown
No	Risperidone	2 mg

Discussion

From our small sample size, It appears that antipsychotics (3 aripiprazole, 3 risperidone, 5 quetiapine, 1 clozapine, 1 chlorpromazine, and 1 loxapine) generally do not negatively impact PR, QRS, or QTc intervals in patients with WPW regardless of their CA status. It appears that antipsychotics decrease PR interval in WPW patients who did not receive CA. Since WPW is a disease characterized by prolonged PR interval in the first place, the decrease in PR interval with antipsychotics is likely not harmful. Of note, 60% of our cohort had received CA. We, therefore, assessed whether this surgical procedure influenced our results. Our main weakness is our limited sample size which is limited by the rarity of the disease and limited access to larger databases.

Conclusions

Our results suggest that antipsychotics do not alter PR, QRS, or QTc intervals in patients with WPW. However, our cohort is small and relatively young. Further research is needed to determine the effects of antipsychotics on WPW patients and establish the impact of each antipsychotic.

References

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