Effects of Statin Therapies on Individuals Taking Antipsychotics: A Systematic Review

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INTRODUCTION

Antipsychotic medications are used to treat a large spectrum of severe mental illness (SMI) in those where psychosis may be present.[1] Patients with a severe mental illness (SMI) taking antipsychotics may develop side effects such as dyslipidemia. Our objective is to provide an update to a previous systematic review showing statin therapy lowering lipid levels in individuals taking antipsychotics while further identifying changes, if present, in body mass index (BMI), blood pressure or any safety concerns.

METHODS

In August 2022, we searched MEDLINE, Embase, PsycINFO, PubMed and Cochrane Central Register of Controlled Trials for studies pertaining to the effects of statins on lipid profile measures for those taking first or second generation antipsychotic medications, with a diagnosis related to SMI. Data extraction was performed in a masked duplicate fashion. Based on article type, each study's risk of bias was assessed using ROBINS-I or RoB-2. The GRADE criteria were used for certainty assessment.

Table 1. Included study description and results

Study	*Study type*	*Study Duration*	*Number of patients*	*Baseline HDL (SD)*	*Post-Tx HDL (SD)*	*Baseline LDL (SD)*	*Post-Tx LDL (SD)*	*Baseline TG (SD)*	*Post-Tx TG (SD)*	*Baseline TC (SD)*	*Post-Tx TC (SD)*
Hanssens et al. (2007)	PC	3 months	46	44.6 (± 13.7)	46.3 (± 15.4)	162.2 (± 38.1)	87.0 (± 25.2)[a]	281.2 (± 272.2)	165.7 (± 137.3)[a]	263.3 (± 62.7)	165.3 (± 39.7)[a]
De Hert et al. (2006)	PC	3 months	52	43.8 (± 12.4)	45.7 (± 14.0)	164.3 (± 36.2)	88.9 (± 2.9)[a]	273.9 (± 260.5)	164.0 (± 129.3)[a]	263.6 (± 59.3)	163.1 (± 38.4)
Ojala et al. (2008)[d]	RC	1 month	28	14.4	14.4	77.4	39.6[a]	61.2	46.8[a]	111.6	72.0[a]
Vincenzi et al. (2013)[c]	RC	1 year	155	46 (± 14.66)	45.38[b]	107 (± 40.13)	88.1[b]	201 (± 110.80)	168.67[b]	193 (± 46.80)	166.76[b]
Vincenzi et al. (2014)	RCT	12 weeks	24	48.1 (± 12.57)	47.91 (± 12.04)	106.22 (± 28.23)	85.13 (± 25.38)[a]	174.4 (± 158.32)	134.33 (± 92.47)	179.63 (± 33.41)	161.04 (± 34.18)[a]
Dey et al. (2020)	RCT	6 weeks	28	38.60 (± 6.78)	41.85 (± 6.71)[a]	132.14 (± 12.75)	128.67 (± 13.96)[a]	81.42 (± 3.95)	80.96 (± 5.23)	177.75 (± 12.79)	173.25 (± 13.38)

HHDL = high-density lipoprotein, LDL = low-density lipoprotein, TG = triglycerides, TC = total cholesterol
HDL, LDL, TG, TC all reported as mg/dl
Tx = treatment
[a] = p-value reported to be <.05 compared to baseline lipid levels
[b] = standard deviation was reported for mean change and therefore could not be calculated
[c] = no statistical testing performed to compare post-treatment from baseline
[d] = lipid panel in primary study was initially reported as mmol/l
SD = Standard Deviation
PC = Prospective Cohort
RC = Retrospective Cohort
RCT = Randomized-Controlled Trial

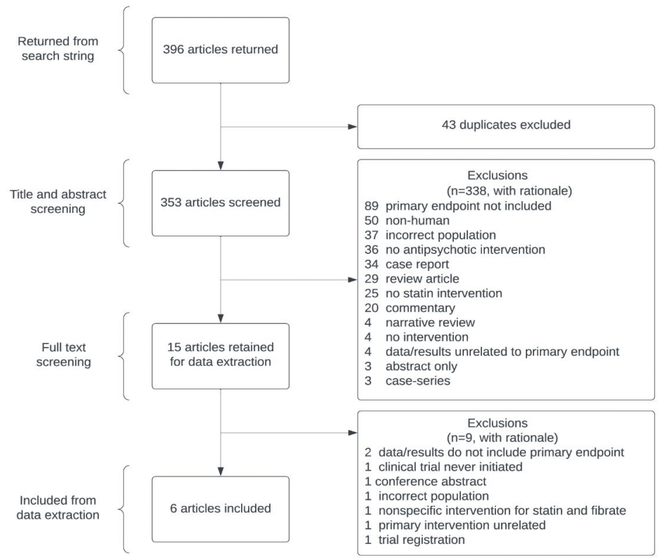

Figure 1. Flow diagram for included and excluded studies

RESULTS

Our initial search returned 396 articles, of which six were included. Five (of 6, 83.3%) articles identified significant change between baseline and post-treatment lipids. Of the articles recording blood pressure, BMI or weight and significant safety concerns, no significant changes were found. The certainty assessment for this systematic review is rated moderate. A meta-analysis was not performed.

CONCLUSION

Patients at risk of developing dyslipidemias secondarily to antipsychotic treatment for a SMI should be considered for lipid lowering therapy with a statin. For this specific population, studies showing a significant reduction in LDL-C with statin therapy demonstrate the utilization of statin as an appropriate prevention and treatment for dyslipidemia and its related cardiovascular risk. These studies showed no significant association between statin therapy and BMI or weight changes; therefore, we recommend providers counsel patients with alternative mechanisms to manage these specific side effects antipsychotic treatment may have. Additionally, these studies yielded no significant association between statin therapy and safety concerns, thus providing an option to manage this population's dyslipidemia without cause for major safety concerns.

References

1. Galletly C, Castle D, Dark F, Humberstone V, Jablensky A, Killackey E, Kulkarni J, McGorry P, Nielssen O, Tran N. Royal Australian and New Zealand College of Psychiatrists clinical practice guidelines for the management of schizophrenia and related disorders. *Aust N Z J Psychiatry*. 2016;50(5):410-472.

RESEARCH