

Lipid Effects of Pioglitazone Vs. Rosiglitazone

Melanie Windjack BSP

Recent studies suggest that <4% of patients with diabetes receive adequate combined treatment of glucose, lipids, and hypertension. The class of drugs known as thiazolidinediones (TZD) impact blood glucose control, and are also known to affect fat and cholesterol metabolism¹. The question is however, do both rosiglitazone (RG) and pioglitazone (PG) have the same effect on lipids? Few trials have matched the two drugs head to head, but many studies have been done on the agents individually. The purpose of this paper is to present the main outcomes of recently published studies to allow the reader to make evidence-based decisions for patients with diabetes.

The following table summarizes the main outcomes of eight studies that evaluated either rosiglitazone or pioglitazone on their own, or the two drugs head to head.

Study	Pioglitazone					Rosiglitazone				
	TC	TG	LDL	HDL	TC:HDL	TC	TG	LDL	HDL	TC:HDL
Herz et al ^{4A}	*	↓	*	↑	↓					
King et al ⁶		↓	↑ ^B	↑						
Raskin et al ²						↑	↔	↑	↑	↔
Phillips et al ⁷						↑	↑ ^C	↑	↑	
Hyun Ko et al ⁵						↑	↔	↑		↔
Boyle et al ^{8D}	↓	↓	↓	↑		↑	↓	↑	↓ ^E	
Gegick et al ³	↓	↓	↓	↑		↑	↑	↑	↑ ^F	
Peters Harmel et al ¹	↔	↓	↔	↑		↑	↔	↑	↑	

A-Study evaluated PG 30 mg/day vs. 45 mg/day.

***PG** 45 mg had no effect on TC and LDL. PG 30 mg increased TC over baseline by 4% and LDL over baseline by 7%. These changes were not significant when compared to placebo.

B-not significant

C-small but statistically significant

D-with the exception of HDL-C, the differences in mean changes in lipid parameters between treatment groups were statistically significant

E-slight (0.12mg/dl)

F-increase in HDL was 2.6% with PG and 6.3% with RG

Rosiglitazone appeared to consistently increase TC and LDL levels. HDL levels are increased in all studies but one. Because HDL and TC are increasing together, some will say the RG does not affect the TC:HDL ratio and therefore does not affect cardiovascular risk, which is thought to be partially predicted by this ratio² (Raskin). However, one must take into consideration the fact that LDL is also being increased.

Pioglitazone consistently decreased TG, and had a neutral effect on or decreases TC. HDL increases were greater in PG groups when compared to RG in all trials but one³ (except in Gegick et al). The effect on HDL should in turn lower patients' TC:HDL ratio, where with RG the ratio is staying the same. The TC:HDL ratio was reported as being decreased by PG in Herz et al, but was not reported in the other pioglitazone studies. Herz et al found that an increased number of patients reached target goals for TG and HDL when receiving pioglitazone.⁴

It can be concluded that pioglitazone and rosiglitazone do not affect lipid parameters in the same way. Caution should be taken when prescribing rosiglitazone to patients who already have other risk factor for cardiovascular disease, such as hypertension and smoking⁵ (Ko et al). The effect that each of these drugs has on lipids needs to be taken into consideration for each patient, as therapy should be individualized and tailored to each patient's situation.

References:

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