

Treatment of Patients with Low Response to Aspirin with Omega-3 Fatty Acids vs. High-Dose Aspirin.

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Background: Low response to the anti-platelet effects of aspirin has been associated with increased risk of adverse cardiovascular events. However, there is no established therapeutic approach to overcome low response to aspirin. We aimed to evaluate the anti-platelet efficacy of two potential approaches: increasing the aspirin dose vs. adding omega-3 fatty acids. The latter have been shown to decrease availability of platelet membrane arachidonic acid and indirectly thromboxane A₂ formation.

Methods: Patients (n=485) with stable coronary artery disease, taking low-dose aspirin (75-162 mg) for at least a week were screened for response to aspirin using the VerifyNow Aspirin assay (Accumetrics®). Patients with a VerifyNow score (ARU) >500 underwent further testing by platelet aggregation. Low response to aspirin was defined by at least 2 of 3 criteria: ARU ≥550, 0.5 mg/ml arachidonic acid-induced aggregation ≥20%, and 10 μmol/l ADP-induced aggregation ≥70%. Thirty patients (6.2%) were found to have low response to aspirin, and were randomized to receive either 325 mg of aspirin daily or low-dose aspirin + omega-3 fatty acids (4 capsules a day, each containing 360 mg EPA and 240 mg DHA, Solgar®). Following one month of treatment patients were re-tested.

Results: Both groups (n=15 each) had similar clinical characteristics (overall 33.3% women, mean age 66.2±9 years, 36.7% diabetes). Following one month of treatment significant reduction in platelet reactivity was observed in both groups (Table). Twelve (80%) patients who received omega-3 fatty acids and 11 (73.3%) patients who received aspirin 325 mg became aspirin responsive following treatment.

Conclusions: Treatment of patients who exhibit low response to low-dose aspirin by adding omega-3 fatty acids or by increasing the aspirin dose appears to improve response to aspirin and effectively reduces platelet reactivity.

Table: Platelet reactivity at baseline and following one month of treatment

	Omega-3 Group Baseline	Omega-3 Group Post	P value	Aspirin 325 Group Baseline	Aspirin 325 Group Post	P value
VerifyNow Aspirin (ARU)	565.7±35	460.9±47	<0.0001	553.8±19	475.9±57	0.0003
Aggregation 0.5 mg/ml AA	19.1±7	13.4±5	0.003	18.9±7	12.9±6	0.01
Aggregation 5 μM ADP (%)	68±10	54.7±11	0.0005	66.3±6	56.1±6	0.0002
Aggregation 10 μM ADP (%)	77.1±7	65.9±11	0.003	74.6±6	69.3±6	0.007