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Letter to the Editor

Lipid Peroxidation and Kawasaki Disease

Kawasaki disease (KD) is an acute vasculitis of unknown etiology that is diagnosed by a constellation of clinical signs and is treated with intravenous immunoglobulin (IVIG) and aspirin, which reduces the incidence of coronary artery aneurysms. Interestingly, IVIG has also been shown to reduce inflammation in experimental models of atherosclerosis as measured by a decrease in the size of atherosclerotic plaques and fatty streaks in Apo E-deficient mice [3]. Markers of endothelial cell damage in acute KD include high levels of plasma endothelin, E-selectin, and factor VIII antigen [1, 2]. Oxidized low-density lipoprotein (OxLDL) and antibodies to this immunogenic molecule are elevated in patients with systemic vasculitides and atherosclerosis [4, 5]. To determine if OxLDL antibodies and antigens might also be markers for the endothelial cell damage in KD, we compared the levels of antibodies to OxLDL (malondialdehyde-LDL IgG and IgM) and oxidized phospholipid epitopes (E06) in 20 acute KD patients (median age, 3.8 years; range, 1.2–6.0 years) and two age- and gender-matched groups: 40 healthy and 20 febrile, hospitalized pediatric controls. Of the KD patients, 2 had had recurrent KD and 7 had coronary artery ectasia or aneurysms documented by echocardiography. Sera from the KD patients were obtained prior to IVIG administration. Antibodies to MDA-LDL were captured with MDA-LDL coated on microtiter wells; then the bound immunoglobulin was detected with labeled anti-human IgG or IgM secondary antibodies [4]. To measure the E06 epitope on LDL, a double sandwich antibody assay was used in which a plated anti-apoB-100 monoclonal (MB47) was used to capture the LDL and then oxidized phospholipids on LDL were detected with the use of biotinylated E06 antibody [4] (studies performed in the laboratory of Joseph Witztum, UCSD). No difference was seen by analysis of variance in the dis-

tribution of antibody levels or the E06 epitope among the three populations (Fig. 1). Surprisingly, a subset from each group showed highly elevated levels in each assay. To our knowledge, this is the first report of OxLDL antibody and E06 measurements in a pediatric population. It does not appear that OxLDL levels are useful in the diagnosis of KD or in the assessment of the clinical severity of KD given the overlap with control groups. Whether these assays may serve as indicators of genetic predisposition to atherosclerosis and ensuing coronary artery damage will require further study.

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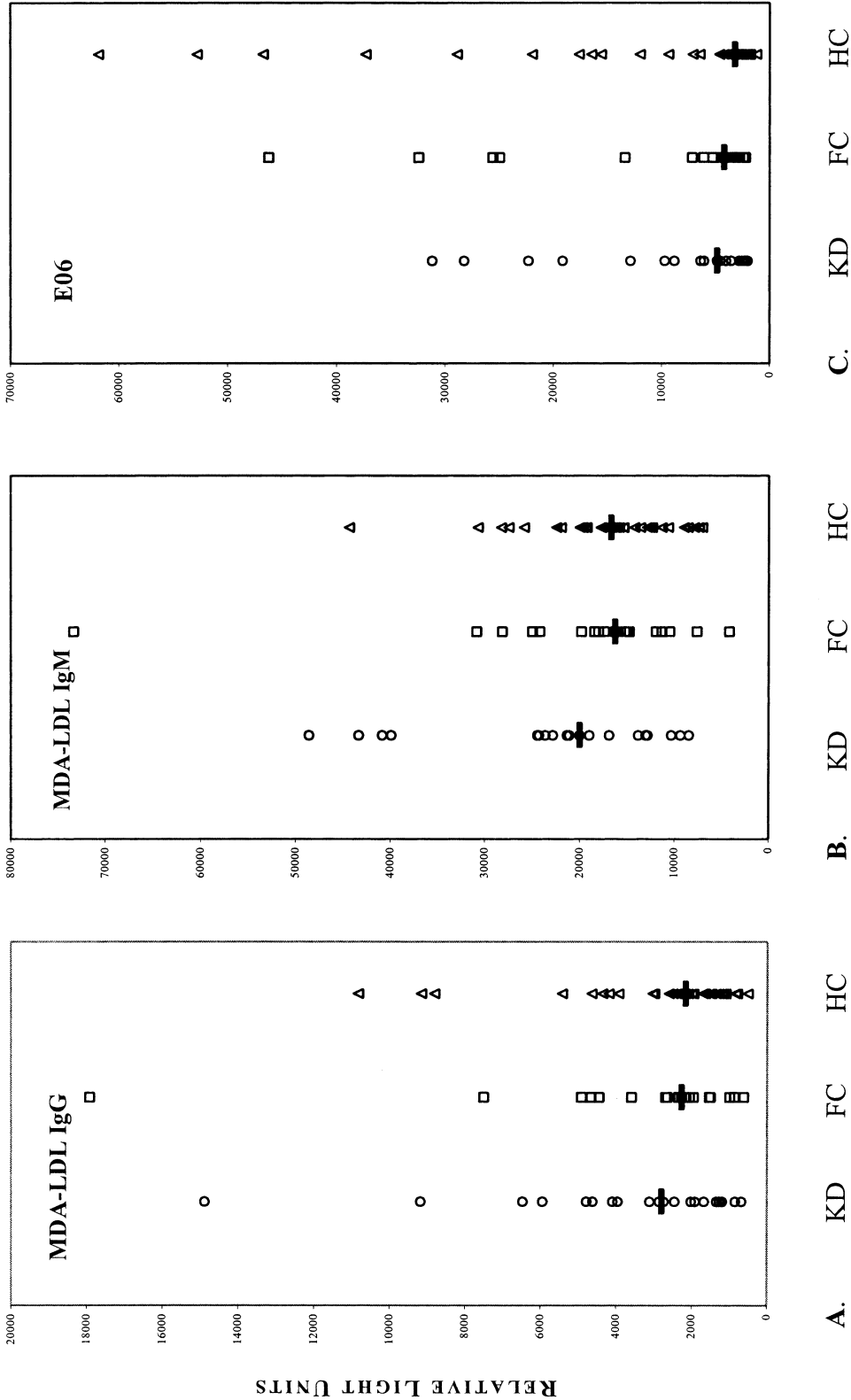


Fig. 1. Oxidized LDL studies in acute Kawasaki disease (KD) patients and pediatric controls. Bar indicates median values. No statistical difference was noted among the three groups. *FC*, febrile controls; *HC*, healthy controls; *MDA*, malondialdehyde.