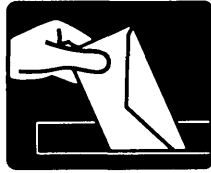


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# Letters to the Editor



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## Changes in Basement Membrane Thickening

It appears to us that the reported decreases in muscle capillary "basement membrane" (i.e., basal lamina) thickness (BMT) in the recent paper, "Changes in Basement Membrane Thickening and Pulse Volume Concomitant with Improved Glucose Control and Exercise in Patients with Insulin-dependent Diabetes Mellitus" (DIABETES CARE 3: 586-89, 1980), by Peterson and his colleagues, are not fully substantiated.

The morphologic method cited in the text was "Kilo and Williamson as modified by Esterly et al.<sup>10,13,14</sup>" Citations 10, 13, and 14 were listed in the reference section as Williamson et al. and Jackson et al. Since the authors did not describe their methods and then used confusing references, it is difficult for the reader to evaluate the methodology used for collecting and analyzing the morphologic data.

First, the authors did not indicate the statistical test used to evaluate the BMT. We have performed statistical analysis on the whole group biopsy for BMT (N = 7) and find no statistically significant changes using a two-tailed *t* test for paired observations at  $P = 0.02$ . Neither is there significant statistical change if the data from patient #10 are omitted. Second, patient #10 was omitted by the authors in their analysis of pulse volume recordings but was included in analyzing the BMT results, while patients #2, #6, and #9 were omitted. It was not clear why patients #2, and #9 were omitted unless they were not in the category of "successfully performed" muscle biopsy. We question any conclusions based on a sample which was manipulated in obtaining the data.

In our opinion, it is imperative to perform appropriate statistical analyses in order to properly evaluate capillary measurements. For this study to be physiologically meaningful, there should have been a statistically significant reduction in BMT for the group as a whole and a statistically significant reduction in BMT for most of the individuals. Although coefficient of variation is an expression of the variation within a group, it does not test for significant changes between two groups.

Accordingly, we question the validity of the data and are unable to draw any meaningful conclusions regarding the effect of insulin treatment on capillary BMT in this study.

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## Changes in Basement Membrane Thickening: Reply

The problems regarding the methodologies for assessment of basement membrane thickening are legendary, and although the order of the authors was reversed in the test of the article, further debate on methodology would not be appropriate. The statistical analysis of the data is not necessary if one assumes that basement membrane thickness increases with both age and diabetes. Any reversal of this trend would be automatically significant. Subsequent statistical analyses depend on the underlying assumptions. Patients were omitted from the data analysis because their biopsies at one time or another were fat and not muscle, and therefore, could not be analyzed. This was the meaning of "successfully performed."

Ultimately, the question of whether this variable or pulse volume recordings improve with improved levels of glucose control and exercise will be answered by further studies in the future.

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