emphasized by studies showing grossly poorer diabetic control in patients having cataract extraction than among the average patients attending a diabetic clinic.[15] These observations, and demonstrations of the appropriate enzymes in the lens of man for activation of the polyol pathway by existing hyperglycemia,[16, 17] lend considerable support to the long-held opinion that poorly controlled diabetes is a factor in the rate of maturation in senile cataract as well as in the development of metabolic or snowflake cataract.[15, 18]

Although of lesser importance, the well known relation of refractive changes in the eye of the diabetic to changing blood glucose levels would be still another basis for adequate blood glucose control, at least in terms of the quality of daily living.

Microangiopathy

The microangiopathy of diabetes involves small blood vessels, particularly capillaries supplying many tissues. The possible value of careful metabolic control in protecting the individual from clinically important retinal and/or renal vascular disease has been the subject of major controversy for 25 years. The UGDP study was directed in major part toward seeking an answer to this question. Thus far, neither the prospective UGDP study nor other studies, all wholly or in part retrospective in nature, have proved conclusively that significant benefit is to be gained from any tighter control of the metabolic components of diabetes than is necessary to avoid the symptoms of diabetes, ketoacidosis, and so forth. Detailed reviews of this subject have either supported no relationship between careful metabolic control and the prevention of microangiopathy,[19] or indicated that such control improves the chances of preventing severer grades of clinical microangiopathy, such as retinitis proliferans and/or nephropathy with renal failure.[20]

Despite the lack of unanimity concerning this controversy, recent biochemical data tend to shift the weight of evidence in the direction of favoring tight metabolic control. In particular, the observations of Spiro regarding the role of hyperglycemia as a stimulus to the biosynthesis of basement membrane material of the renal glomerulus,[21, 22] and observations of basement membrane thickening showing an apparent correlation with duration of insulin deficit,[23] appear to bolster the practice of those physicians who strive for normoglycemia.

Meanwhile, although not specifically related to effects upon microangiopathy, sufficient data have accumulated to support the role of striving for normoglycemia as assiduously as possible in assuring survival of the fetus of the diabetic mother.[24, 25]

Macroangiopathy

Although neuropathy, increased susceptibility to infection, and microangiopathy are the most specific manifestations of diabetes mellitus and are of particular concern because of their adverse effects upon many younger patients, the overall greatest problem in terms of morbidity and mortality is that related to involvement of medium and larger vessels, especially the coronary, cerebral and lower extremity arteries. The prevalence of such vascular lesions is high in the