apparent retinopathy. Macrovascular disease develops after 25 years of diabetes and creates the predominant problems in patients with type 2 DM. The process appears to be one of glycosylation, wherein proteins from the blood become deposited in the walls of small vessels (e.g., glomeruli), where they become trapped by "sticky" glucose compounds (glycosyl radicals). The buildup of these substances over time causes narrowing of the vessels, with subsequent interference with microcirculation to the affected areas (Rosenson and Herman, 2008).

With poor diabetic control, vascular changes can appear as early as 2½ to 3 years after diagnosis; however, with good to excellent control, changes can be postponed for 20 or more years. Intensive insulin therapy appears to delay the onset and slow the progression of retinopathy, nephropathy, and neuropathy. Hypertension and atherosclerotic cardiovascular disease are also major causes of morbidity and mortality in patients with DM (Karnik, Fields, and Shannon, 2007).

Other complications have been observed in children with type 1 DM. Hyperglycemia appears to influence thyroid function, and altered function is frequently observed at the time of diagnosis and in poorly controlled diabetes. Limited mobility of small joints of the hand occurs in 30% of 7- to 18-year-old children with type 1 DM and appears to be related to changes in the skin and soft tissues surrounding the joint as a result of glycosylation.

Nursing Alert

Recurrent vaginal and urinary tract infections, especially with *Candida albicans,* are often an early sign of type 2 DM, especially in adolescents.

Diagnostic Evaluation

Three groups of children who should be considered as candidates for diabetes are (1) children who have glycosuria, polyuria, and a history of weight loss or failure to gain despite a voracious appetite; (2) those with transient or persistent glycosuria; and (3) those who display manifestations of metabolic acidosis, with or without stupor or coma. In every case, diabetes must be considered if there is glycosuria, with or without ketonuria, and unexplained