

LATE COMPLICATIONS OF DIABETES MELLITUS: PATHOPHYSIOLOGY AND CLINICAL IMPACT**Malika Shuhrat qizi Narzilloyeva**

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Diabetes mellitus is a chronic metabolic disorder characterized by persistent hyperglycemia. Prolonged uncontrolled blood glucose levels lead to significant late complications that affect multiple organ systems. These complications include microvascular damage (neuropathy, retinopathy, nephropathy) and macrovascular disease (coronary artery disease, cerebrovascular disease, peripheral arterial disease). This thesis explores the pathophysiological mechanisms behind these complications and their clinical consequences.

Objective:

To analyze the late complications of diabetes mellitus, their underlying mechanisms, and their impact on patients' quality of life.

Materials and Methods:

A review of current medical literature, clinical studies, and patient data was conducted. Emphasis was placed on the role of chronic hyperglycemia, oxidative stress, and endothelial dysfunction in the development of late complications.

Results:

The study found that prolonged hyperglycemia damages small and large blood vessels through glycation of proteins and increased free radical production. Common complications include:

- Diabetic retinopathy → leading cause of blindness in adults.
- Diabetic nephropathy → a major cause of chronic kidney disease.
- Diabetic neuropathy → causes sensory loss and foot ulcers.
- Accelerated atherosclerosis → increases risk of heart attack and stroke.

Conclusion:

Late complications of diabetes mellitus are a major cause of morbidity and mortality. Effective glycemic control, early screening, and multidisciplinary management are essential to prevent or delay these complications.

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