

DIABETES MELLITUS

by John Falkner-Heylings BSc(Podiatric Medicine), DipPodM, FPSPract

Diabetes mellitus is the name given to a group of disorders characterised by persistently high blood glucose levels. The effects are systemic – tissues and mechanisms throughout the body are affected.

Diabetes Mellitus is of great concern to all health workers, but perhaps even more so to those whose principal interest is in the lower limb and foot. These parts are the most distant from the heart and directly because of this spatial relationship they are the most dependent upon the state of the blood vessels between for supply of nutrients and drainage of toxins.

Continually elevated blood glucose causes macrovascular and microvascular damage to blood vessels. Damage is incurred at all organisational levels, so that the vessels suffer deterioration in the structure of their walls and a reduction in the patency of the lumen which restricts supply of nutrition and oxygenation. The lower limbs and feet thus become susceptible to tissue viability issues - ulceration - and this all too frequently leads to the need of amputation and its devastating consequences.

Glucose is potential energy and is stored in times of plenty in fat and muscle tissues. Diabetic conditions prevent cellular take-up of glucose from current digestion, so the stored provision is drawn upon to meet the perceived need. But the stored product broken down is no more available to the cells than that from the immediate digestion. Fat stores, liberated into the bloodstream, are deposited on the inner walls of the arteries causing cardiovascular disease. In addition, breakdown products known as ketones (chemicals related to acetone) are produced that may cause ketoacidosis which can lead to coma and death. Damage is done to the receptors and neurones of the peripheral nervous system, and the neuropathies that arise create vulnerabilities, particularly affecting the leg and foot.

Damage is also sustained by the neurones of the autonomic nervous system, so the housekeeping systems of the body no longer function as they should. One effect of autonomic nerve damage is gastroparesis, the condition in which the stomach contents do not progress into the duodenum at the right time. Given that our digestions are essentially a sequential series of chemical processes, the timing and length of exposure of our foodstuffs to various enzymes and additives is important to the optimal extraction of nutritive products. Another effect of autonomic nerve damage is that skin quality deteriorates as glands that normally support and maintain the skin barrier no longer function. The skin barrier is a principal component of our defence mechanism and its loss of integrity is another regular cause of ulceration.

Persistently high blood glucose levels cause trouble in other specific parts of the anatomy. Blood vessels serving the retina of the eye may proliferate, anastomose and burst, covering the light-sensitive cells with extravasated blood. These cells then die, leading to progressive blindness. Kidney nephrons, although compromised, work overtime to reduce the excessive glucose in the bloodstream and produce excessive amounts of urine, leading to the need to drink excessive quantities of fluids....

*# **polyphagia** reflects the lack of nutrition due to the carbohydrate metabolism problem*

*# **polyuria** is the excessive production of urine, and*

*# **polydipsia** is the consequent need to drink excessively....*

-these are the principal signs of diabetes.

ALLIANCE PROFESSIONAL DEVELOPMENT

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Answers should be submitted on A4 paper and should be of sufficient length to demonstrate your understanding. Single word answers are not permissible. Try to answer each question in one or two short sentences.

Q1. What are the principal signs of diabetes?

Q2. What is polydipsia and why does it occur?

Q3. What is retinopathy and what threat does it pose to the diabetic?

Q4. Why are the lower limbs most susceptible to diabetic complications?

Q5. Briefly discuss blood vessel damage in Diabetes mellitus.

Q6. What is meant by autonomic nerve damage?

Q7. Give two examples of autonomic nerve damage and explain the effects of each.

Q8. How do continually elevated blood glucose levels affect the blood vessels?

Q9. What threat does Diabetes mellitus pose to the lower legs and feet?

Q10. Explain polyuria.

Return this page with the administration fee (£28) and your answers to:

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