

Exercise – Constructing a concept map of diabetes mellitus.

Directions: Use the summary of Diabetes Mellitus to construct a concept map. First construct a two level map individually and then work together on completing the map on the poster pad. You may add any additional information that you know about diabetes in addition to that given.

We will discuss two things: 1) How you were thinking, 2) Your reaction to the process.

Diabetes Mellitus

I. General features

- A. 5-7% incidence in population
- B. Hyperglycemia
- C. Relative or absolute deficiency in insulin.

II. Type I versus Type II

A. Type I (juvenile)

- 1. usually occurs before 25 y
- 2. moderate genetic component
- 3. absolute requirement for insulin
- 4. autoimmune destruction of β -cells
 - a. triggered by infection
 - b. progresses over several years
- 5. common symptoms
 - a. polydipsia
 - b. polyuria
 - c. polyphagia
- 6. acute outcome – ketoacidosis

B. Type II (adult)

- 1. usually occurs after age 40
- 2. strong genetic component
- 3. relative hypoinsulinemia, insulin elevated
- 4. increased insulin resistance
- 5. common symptoms
 - a. variable – asymptomatic to polydipsia, polyuria, polyphagia
- 6. acute outcome – hyperosmolar coma

III. Clinical outcomes of hyperglycemia

A. General pathophysiology

- 1. glycosylation of proteins
 - a. membrane proteins
 - b. enzymes
 - c. structural proteins
- 2. measured by hemoglobin A1c

B. Vascular

- 1. atherosclerosis
- 2. coronary artery disease
- 3. gangrene

C. Neurologic

- 1. Stocking-glove pattern

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- 2. Impotence
- D. Eyes
 - 1. retinopathy
 - 2. hemorrhage
 - 3. cataracts
- E. Renal
 - 1. nodular sclerosis
 - 2. renal failure
- IV. Diabetic ketoacidosis versus nonketotic hyperosmotic state
 - A. Diabetic ketoacidosis
 - 1. pathology
 - a. increased serum ketone bodies
 - b. hyperglycemia
 - c. increased anion gap
 - d. metabolic acidosis, pH <7.2
 - 2. precipitating event
 - a. infection, 50%
 - b. insufficient insulin, 25%
 - 3. clinical presentation
 - a. nausea and vomiting
 - b. Kussmaul respiration (deep, gasping)
 - c. diuresis
 - 4. treatment
 - a. insulin
 - b. saline
 - c. potassium replacement
 - B. Nonketotic hyperosmotic state
 - 1. pathology
 - a. hyperosmolarity
 - b. hyperglycemia
 - 2. precipitating event
 - a. decreased sense of thirst (aging)
 - b. infection
 - 3. clinical presentation
 - a. coma
 - 4. treatment
 - a. insulin
 - b. saline