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Recommended Citation
Sutter, Olivia, "Congenital Heart Disease (CHD) Adult Survivors and Type 2 Diabetes Mellitus" (2018). Nursing Student Class Projects (Formerly MSN). 278.
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Congenital Heart Disease (CHD) Adult Survivors and Type 2 Diabetes Mellitus (T2DM)

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Introduction and Significance of Pathology

- The risk of developing T2DM in CHD survivors is 1.15 times higher than the general population (Madsen et al., 2016).
- This risk for T2DM is higher in adults with CHD now surpassing the number of children with CHD (Madsen et al., 2016).
- About 20% of the American population has diabetes (Medscape, 2018).
- Approximately 50% of CHD adult survivors have a physical or developmental disability (Mayo Clinic, 2018).
- About 30% of the American population has diabetes mellitus type 2 (CDC, 2018).

Congenital Heart Disease (CHD)

- Type of heart defects: (Mayo Clinic, 2018)
  - Hypoplastic left heart syndrome
  - Critical/cyanotic
  - Critical/acyanotic
  - Tricuspid valve abnormality
  - Pulmonary stenosis
  - Aortic stenosis
  - Patent ductus arteriosus
  - Transposition of the great arteries

Pathophysiology

- Type 2 Diabetes Mellitus (T2DM)
  - Type 2 diabetes is characterized by abnormal glucose metabolism from peripheral insulin resistance and decreased insulin secretion regulated by malfunctions of beta cells of the pancreas (Madsen et al., 2016).
  - Beta cells: part of pancreas that make insulin in type 2 diabetes are defective.
  - Alpha cells: part of pancreas that secrete glucagon in type 2 diabetes, alpha cells lose high glucagon secretion.

Signs and Symptoms

- Congenital Heart Disease
  - Heart failure
  - Cyanosis
  - Tachypnea
  - Poor feeding and poor weight gain
  - Swelling around eyes and abdomen

- Type 2 DM
  - Classical symptoms: thirst, polyuria, unexplained weight loss, fatigue
  - Classic signs: pulse measurement, blood pressure measurement

Signs and Symptoms of Congenital Heart Disease (CHD)

- Common signs and symptoms:
  - Heart failure
  - Cyanosis
  - Tachypnea
  - Poor feeding and poor weight gain
  - Swelling around eyes and abdomen

Signs and Symptoms of Type 2 Diabetes Mellitus (T2DM)

- Common signs and symptoms:
  - Thirst
  - Polyuria
  - Unexplained weight loss
  - Fatigue

Conclusions

- The complexity of the adult congenital heart disease population cannot be overstated, especially those living with chronic kidney disease (Mayo Clinic, 2018).

Nursing Implications

- Exercise restrictions for individuals with CHD are now discouraged due to the prevalence of obesity in this population and the comorbid conditions/congenital defects in children (Medscape, 2018).
- Diet changes, along with exercise should be encouraged in this population to promote prevention of all diseases of aging, especially type 2 DM (Medscape, 2018).

References

- Madsen, et al. (2016)
- Stout et al. (2015)
- American Heart Association (ADA).
- American Diabetes Association (ADA).
- CDC (2018)