**Cerebrovascular Accidents: Background and Pathophysiology**

**Background**

Cerebrovascular accidents (CVA) otherwise known as strokes, apoplexy, or brain attacks refer to the death or damage of parts of the brain resulting from the blockage of blood supply by blood clots (ischemic stroke) or bursting of blood vessels (hemorrhagic stroke) in the brain (CDC, 2016). Cerebrovascular accidents are fatal and usually result in disability, brain damage or death. A myriad of factors can cause a stroke. Some of the known risk factors of stroke include hypertension, obesity, alcohol consumption, lack of physical activity, and high salt intake to mention but a few (WHO, 2014; Internet Stroke Center, 2018).

Data by the World Health Organization (WHO) states that there are approximately 17 million deaths from stroke registered worldwide each year (WHO, 2018). In the United States, an estimated 795000 people suffer a stroke each year with 610000 of these being new cases while the rest are subsequent encounters (CDC, 2017). Stroke is the leading cause of disability in the world (Mir, Al-Baradie & Alhussainawi, 2014) and the fifth leading cause of death in the United States (CDC, 2017). The incidence of stroke differs among different population groups. The risk factors may be determined by factors such as race and ethnicity, gender and age.

**Race and Ethnicity**

In the United States, Black people have the highest rate of deaths from strokes. The rate of stroke-related deaths among Hispanics has also been on the rise since 2013 (CDC, 2017). The CDC’s National Center for Chronic Disease Prevention and Health Promotion fact sheets asserts that both African American women and men have a higher risk of stroke than any other men or women in the United States due to factors such as the earlier onset of high blood pressure, high salt intake, and higher incidences of sickle cell anemia, obesity and diabetes (*African-American Women and Stroke*, 2016; *African-American Men and Stroke*, 2016). The *Hispanics and Stroke* (2016)fact sheet states that stroke is the fourth leading cause of death among Hispanics. Further, the report states that the average age for strokes in this population group (80) is younger than among non-Hispanic whites. This is because, in comparison to non-Hispanic whites, Hispanic whites have higher rates of high blood pressure, diabetes, being overweight and obese, and smoking.

**Age**

The risk of cerebrovascular accidents varies depending on age. According to the CDC (2017), although stroke can occur at any age, older people have a higher risk of stroke. Statistics presented by the Internet Stroke Center (2018) show that about 75% of strokes in the United States occur among people over 65 years of age.

**Gender**

The prevalence of stroke also differs by gender. For instance, the *Women and Stroke* (2016) factsheet posits that every one out of five women suffers a stroke at least once in their lifetime. The fact sheet also reports that 60% of all stroke-related deaths in the United States are among women. In fact, the number of stroke fatalities is twice as much as deaths from breast cancer. Women are at a greater risk of stroke compared to men because of factors such as greater life expectancy, some types of birth control, and mental health issues. High blood pressure during pregnancy also serves as a risk factor for stroke among women. According to the *Men and Stroke* (2016) fact sheet, on average, men suffer strokes at younger ages than women with stroke being the fifth leading cause of death among these population group. Stroke is also the greatest cause of disability among American men. Some of the contributing factors for stroke in men include higher likelihood for smoking and excess alcohol consumption, higher rates of diabetes and lack of adequate physical activity.

**Pathophysiology**

Cerebrovascular accidents (CVA) can either be ischemic or hemorrhagic. Ischemic stroke results from the blockage of blood supply by blood clots whereas hemorrhagic stroke is caused by the bursting of blood vessels in the brain (CDC, 2016).

**Ischemic Stroke**

When blood clots block blood vessels in the brain, the brain’s supply of nutrients and oxygen is limited and so is the removal of carbon dioxide and other waste materials (*Ischemic Stroke*, 2018). Such blockages should be treated immediately to avoid permanent brain damage. Some of the causes of ischemic stroke include contraction of cerebral arteries due to cholesterol deposition or atherosclerosis or clotting of blood in the heart due to heart attacks or irregular heartbeat. Other causes may include drug and substance use and blot clotting disorders. Ischemic strokes can either be embolic (blood clots outside the brain) or thrombotic (blockage of cerebral arteries) (*Ischemic Stroke, 2018).* According to Mir, Al-Baradie, and Alhussainawi (2014), ischemic stroke can also manifest in form of systemic hypoperfusion or venous thrombosis. Anyone can suffer an ischemic stroke though older people (60 years and above) are at a higher risk.

**Hemorrhagic Stroke**

Hemorrhagic strokes are rarer than ischemic strokes and are associated with higher mortality rates. These kinds of strokes make up about 15% of all stroke incidences (Mir, Al-Baradie & Alhussainawi, 2014). Hemorrhagic strokes occur when blood vessels in the brain burst resulting in hypoxia or intracranial pressure (ICP). According to Shi (2017), some of the causes of hemorrhagic stroke may include *“inflammation, blood-brain barrier (BBB) dysfunction, and oxidative stress”* (p.77). Hemorrhagic strokes can either be intracerebral or subarachnoid (Mir, Al-Baradie, and Alhussainawi (2014). Intracerebral strokes may result from trauma, hypertension, the use of amphetamines or other street drugs or other bleeding disorders. Subarachnoid strokes, on the other hand, may occur as a result of ruptured aneurysms or the bleeding of vascular malformations.

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