Nutrition in Stroke: Acute Care

By Rebecca Lustig, MA, RD, CDN, CNSC
Risk Factors: Obesity

- Obesity → BMI ≥30 kg/m²
  - Overweight → BMI 25-29 kg/m²
- According to WHO, >700 million (9.6%) were obese by 2015 worldwide
- Overweight/obesity significantly a/w increased risk of stroke
  - For every unit increase of BMI above normal → 6% increase in the adjusted relative risk of stroke
  - Similar for men and women, regardless of race
- Obesity → increased risk of HTN and T2DM
- Central adiposity better predictor of stroke risk
  - Waist/hip ratio
  - Risk higher for middle-aged pts vs older pts
Risk Factors: Obesity

Intermediate Variables

- Hyperlipidemia/Dyslipidemia
  - TG >150 mg/dL
  - LDL >100 mg/dL
  - HDL <40 for women, <50 for women
  - Total cholesterol >200 mg/dL
- Afib
  - Unclear if Afib causes atherosclerosis or vice versa
- OSA
  - Oxidative stress, inflammation, endothelial dysfunction
- HTN
  - Stage I: 140-159/90-99 mmHg
  - Stage II: ≥160/100 mmHg
Risk Factors: Obesity
Intermediate Variables

- **T2DM**
  - HbA1c >= 6.5
  - FBG >= 126 mg/dL
  - OGTT >= 200 mg/dL
  - Central adiposity → hormone dysregulation → insulin resistance over time
    - Increased inflammatory cytokines TNFα, iNOS, MCP-1, and IL-6.41; decreased adiponectin release
  - Obesity increases risk of HLD, HTN, T2DM, Afib, OSA which increase risk of stroke
    - Damage to vasculature from inflammation, advanced glycation end products contributing to atherosclerosis/likelihood of blockage and/or thrombosis
    - Hypercoagulability, enhanced platelet aggregation
Obesity Etiology:

- Combination of genetic/environmental factors
  - Psychology, intake vs energy expenditure, gut microbiome, social environment, food availability, food and nutrition-related knowledge
  - Studies have found >50 genes a/w obesity including melanocortin 4 receptor, LEP, LEPR, INSIG2, ADIPOQ
  - Genes control hormonal interactions b/t insulin, leptin, ghrelin
Risk Factors: Obesity

- Though stroke risk increased → prognosis may be better in overweight/obese vs normal wt counterparts
  - “Obesity paradox” - decreased mortality rates in event of stroke
  - May also be r/t age, with younger obese pts at higher mortality risk vs older obese pts
  - May decrease risk of hemorrhagic transformation s/p stroke, stroke recurrence, improved functional recovery
  - OSA a/w higher risk of mortality/poor outcome
- May be r/t obese survivors healthier at baseline vs those with metabolically “benign” obesity
  - 11-25% of obese people have normal BG and insulin regulation
Prevention: Weight Loss

- Wt reduction → may improve BP, BG, TG and HDL levels; insulin sensitivity; inflammatory marker
  - Proportional to amount of wt lost
- 5% to 10% wt loss:
  - HbA1c → decrease 0.5%
  - SBP → decrease 3-6 mmHg
  - HDL → increase 3 mg/dL
- 6% wt loss among overweight persons w/ impaired glucose metabolism
  - 58% reduction in progression to DM
- >10% wt loss:
  - HbA1c → decrease 1.4%
  - 42% to 51% improvement in insulin resistance
  - TG → 30-70% decrease
  - HDL → 10% to 19% increase
- Diet-based programs including intensive/frequent lifestyle counseling → most successful
Nutrition Specifics in Stroke:

- **Ischemic stroke:**
  - Dysphagia present in 78% of pts
  - Lack of hypermetabolism present
    - Kcal needs not significantly increased
    - Increased risk of aspiration PNA
  - May be on altered consistency diet, per SLP recs
    - Solids:
      - Purees → mechanical ground → dental soft
    - Liquids:
      - Honey-thick → nectar-thick → thin

- **Hemorrhagic stroke:**
  - ICH, IVH, IPH, SDH, SAH, EDH, hematoma
  - ~126-139% above normal energy needs based on HBE
  - Traumatic PRO needs are higher if TBI also present
References:


