Juvenile Obesity
an Emerging Problem.

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Disclosure

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Sarasota Memorial Hospital
You are more than welcome to visit our hospital in Sarasota, Florida
Quiz # 1

Prevalence of Obesity in Juvenile?

A. 10%
B. 20%
C. 30%
D. over 30%

Question #2

• Epicardial fat increase in Obesity,
  • A. True
  • B. False
Question #3

- Excess Epicardial fat is a risk factor:
  - A. True
  - B. False

Quiz #4

- How many calories are in a Venti (large) Starbucks Coffee Frappuccino?
  - A. 120 calories
  - B. 220 calories
  - C. 380 calories
Introduction

Juvenile obesity has emerged as one of the most important public health problems in the United States and other countries in the world. The increasing prevalence of juvenile obesity has led to the emergence of multiple serious obesity-related comorbidities that not only threaten the health of those affected but also promise to place a large strain on the health care system.

Juvenile individuals with obesity are at high risk for multiple comorbidities previously considered to be “adult” diseases.

Continue: Introduction

Juvenile obesity is associated with:

A. Type 2 diabetes mellitus
B. Hypertension,
C. Dyslipidemia,
Obstructive sleep apnea, Nonalcoholic fatty liver disease, and other diseases.
Objectives
A New Understanding Of Juvenile Obesity

“Genetics loads the gun—the environment pulls the trigger.”
George Bray, 1996

Planed Discussion

• 1. Prevalence
• 2. Etiology
• 3. Pathophysiologic link between Juvenile Obesity and cardio metabolic risk
• 4. Guidelines for Diagnosis
• 5. Risk Assessment in Obesity utilizing novel Tools
• 6. Comorbidities commonly associated with juvenile obesity
• 7. Current Management
• 8. Novel publications on Obesity from our center
• 9. Conclusions and take home messages
Prevalence of Childhood obesity

Overweight or Obesity increases with advancing age:

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Overweight</th>
<th>Obese</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preschool children (age, 2-5 years)</td>
<td>8.4</td>
<td>22.8</td>
</tr>
<tr>
<td>School-aged children (age, 6-11 years)</td>
<td>17.7%</td>
<td>34.2%</td>
</tr>
<tr>
<td>Adolescents (age, 12-19 years)</td>
<td>20.5%</td>
<td>34.5%</td>
</tr>
</tbody>
</table>

Obesity Prevalence

Obesity epidemic is sweeping the world, and there is no evidence that this phenomenon will plateau in the near future.
Tracking of Juvenile Obesity Into Adulthood

Unfortunately a high percentage of Juvenile with obesity carry their adiposity into adulthood. Resulting in devastating sequela of cardiovascular and other health problems.
ETIOLOGY

Juvenile obesity is the consequence of an interaction among a complex set of factors that are related to:

A. Genetics ...........................30 to 50%
B. The obesogenic environment
C. Ecological effects such as the family, community, and school

Obesogenic environment

My 5 year old Daughter story while visiting in Cairo 41 years ago

Requesting to eat Hamburger?
Obesogenic deserts at major hotel in Cairo [2/18/2017] All you can eat
Obesogenic environment Major contributor to obesity

Pathophysiology link of Obesity and CVD

Fat cells are the mediators of the insulin resistant and the cardio metabolic syndrome.
Adipose tissue is an endocrine organ. It provides the metabolic communication mechanism with distant organs including the central nervous system.

*J Clin Endocrinol Metab. 2004;89:2548-2556.*

**Excess Abdominal Adiposity**

= High-Risk Fat

- Associated With Inflammatory Markers (C-reactive Protein)
- Free Fatty Acids (FFAs)
- Adiponectin (Insulin Sensitizer)


Obesity induces inflammatory changes in adipose tissue

Fat Cells As Mediators of Insulin Resistance

Adipokines: Metabolically active molecules link Obesity and Atherothrombosis

Atherogenic:
- Leptin
- Resistin
- Visfatin
- CRP
- IL-6
- PAI-1
- Angiotensinogen
- MCP-1

Antiatherogenic:
- Adiponectin
- Omentin
- Apellin


Visceral and Perivascular Adipose tissue are the link for the development of Comorbidities & Cardiovascular Disease Including Atherothrombosis

Reversible factors
A, B, C

Irreversible risk factors
Sub clinical atherosclerosis

Changes in
A Glucose
B Hypertension and
C Lipid metabolism
Disease progression
Disease and CV Events
- Diabetes
- Stroke
- MI
Death

Metabolic Syndrome
Risk Factors can lead to Endothelial Dysfunction, Sub-clinical and Clinical Atherosclerosis

COMORBIDITIES associated with CHILDHOOD OBESITY

Juvenile obesity is associated with comorbidities affecting almost every system in the body including, but not limited to:

- Cardiovascular…..M.S. increase Epicardial fat
- pulmonary,,,,,,,,,,,,,,,,,,O.S.A, Asthma
- Gastrointestinal,,,,,,,,,,,,,,,,,,,,NAFLD
- The endocrine,,,,,,,,,,,,,,,,,,,,T2DM, PCOS
- musculoskeletal systems and much more
- The severity of these comorbidities typically increases with the severity of obesity.
Excess Epicardial Fat in obesity and diabetes is major risk

Parallel epidemics of diabetes and obesity

CDC. www.cdc.gov.
Complications of Obesity

Diagnosis

Who is at high CV Risk?

(Frequently you do not need guidelines)
What are the current Guidelines for the Diagnosis of Childhood Obesity?

Overweight............................. 85-95 Percentile
Obese.................................95-120 Percentile
Morbid Obesity......................>120 Percentile
Assessing overweight & Obesity?


- **BMI**

- **Waist circumference**

- Waist / Hip Ratio >0.9

BMI Or Waist Measurement?

Risk Assessment in Obesity utilizing Novel Tools
How TO Assess CV RISK ???

1. The old CV scoring System [FRS]

2. The new CV scoring System [RRS]

- OBESE Patients must undergo Optimal Global risk assessment for CVD and future Cardiovascular Events to determine treatment strategy.

Is the Patient early Low, Intermediate or High Risk???
Screening Tests for Early Detection and Determination of Cardiovascular Risk Category

Include Tests for:

1. Vascular Evaluation
2. Cardiac Evaluation
3. Modifiable Disease Contributors

Earl Cardiovascular Disease Risk Score Consists of:

• 10 Non-Invasive tests
  – Large Artery Elasticity (C1)
  – Small Artery Elasticity (C2)
  – Resting BP, BP post-exercise
  – Carotid Intima Media Thickening
  – Retinography
  – Abdominal aorta ultrasound
  – Micro albumin
  – ECG
  – Left Ventricular Ultrasound
  – Pro-BNP
  – Hs-CRP
  – Fasting Lipid Panel
  – Fasting Blood Sugar
Publications on Obesity from our Center

Novel abnormal cardiovascular findings and data on obesity without comorbidities published* from our cardiovascular disease assessment center since 2011

Utilizing ECVDRS

* Presented at the annual meetings of many national and international CV societies since 2011 including AHA, ACC, ESC, SCCT, ASH, HFSA, ESHF and much more

Obesity and CVD: An Association or a Cause and Effect Relationship
Novel data on Obesity study done at CVD Assessment Center, Sarasota, Florida Utilizing ECVDRS

Studies on obesity published from our center:


Studies on obesity published from our center…cont.


6. Abnormal Carotid Intima-Media Thickness is a Predictor of Coronary Artery Disease in Asymptomatic Obese Subjects Regardless of Sex, - SCCT 2012

Studies on obesity published from our center…cont.

7. Novel approaches for risk stratification and management of asymptomatic Metabolic Syndrome subjects : is Metabolic Syndrome a marker of Coronary Artery disease in all ?- presented at the Fifth Annual Scientific Meeting of the Society for Cardiovascular Computed Tomography [SCCT] July 15-18, 2010;

8. Is metabolic syndrome cardiovascular disease (CVD) risk equivalent?- presented at the European Society of Cardiology (ESC) Euro PRevent Annual Meeting, Geneva, Switzerland, April 2011
Studies on obesity from our center to be presented at next congress of the European Society of Cardiology/EuroPrevent on April 6-8, 2017 in Malaga Spain

Decades of obesity even without comorbidities in asymptomatic subjects is associated with significant cardiovascular structural and functional abnormalities

To be presented at the annual meeting of the European Congress of Cardiology/Europrevent on April 6/2017 Malaga/ Spain
Epicardial adiposity, regardless of visceral adiposity, is associated with significant cardiovascular abnormalities in untreated and asymptomatic subjects, as measured by the calcium score

To be presented at the annual meeting of the European congress of cardiology/Euro prevent
On April 8/2017 Malaga/ Spain

Your abstract has been selected for its outstanding quality and will be presented as a Rapid-Fire presentation during an oral session chaired by two experts in the topics presented

Eight abstracts will be presented during the session

*Current Management*
“The second leading preventable cause of death is attributed to dietary factors and physical inactivity.”

Goals for Managing Obesity is to prevent or delay the development of:

* working definition

Gelfand EV et al, 2006; Vasudevan AR et al, 2005
CLINICAL EVALUATION OF THE CHILD WITH OBESITY

• The clinical evaluation of the obese child is directed at identifying:
  A. The cause of obesity
  and
  B. Obesity-related comorbidities

Management of Childhood Obesity

Lifestyle modifications including dietary changes aimed at decreasing total caloric intake increasing physical activity and decreasing sedentary time are crucial for weight management.

Pharmacotherapy may have a role in the treatment of pediatric obesity, but evidence is scant.
Therapeutic Lifestyle Changes

REMEMBER:

APPETITE IS OUR WORST ENEMY
EAT a GOOD BREAKFAST
SHARE YOUR LUNCH
GIVE YOUR DINNER TO YOUR ENEMY

Note Appetite is our worst enemy

Self Control
Walking the dog--- MS Style!
Conclusions and Take home Messages on Juvenile Obesity

Juvenile Obesity is “a modern disease” frequently associated with several cardio-metabolic risk factors, markers and CVD events:

- Hypercaloric diet
- Stress
- Insulin resistance
- Hypertension
- Atherogenic dyslipidemia
Juvenile Obesity and evidence for early CVD

Still:

- Under Diagnosed
- Under Treated
- Under Controlled

TAKE HOME MESSAGES

#1

Excessive production of the Atherogenic Adipokines are the pathophysiological link between Juvenile Obesity and CVD
One ounce of prevention is better than pound of cure to interrupt the cardiovascular continuum.

Cardiologist, Internist, Family Practitioners, PA, and ARNP are better fitted to screen and treat cardiovascular Risk factors associated with Obesity with the hope to prevent or delay the onset of Cardiovascular complications and its devastating sequela.

Final Advice

Optimizing the use of evidence based and personalized Medicine in early diagnosis and management of Obesity would reduce or delay the onset Diabetes and other comorbidities thus resulting in decrease of CV Disease and would Save Lives.

Also keeping in mind that TLC (nutrition, exercise, cessation of smoking and weight reduction) are of paramount importance.
Wrap Up

- Juvenile Obesity increases risk of developing cardiovascular risk factors
- Juvenile Obesity increases long-term risk for cardiovascular disease

Time for change:
The new practice pattern for CV risk reduction
We are
ALL

Preventive Health care Providers

Children Should Know Their Grandparents and Become Great Grandparents Themselves
Grand Parents should live long enough to enjoy their grand children and grand children should grow up to know their grand parents [December 2008]
Continuous Quality Improvement

Improvement Never Ends . . 

Thank You

This material was prepared by Florida Medical Quality Assurance, Inc., under contract with the Centers for Medicare & Medicaid Services (CMS), an agency of the U.S. Department of Health and Human Services. The contents presented do not necessarily reflect CMS policy.
END

Questions???