L'Hôpital de Montréal pour enfants
The Montreal Children's Hospital
Centre universitaire de santé McGill
McGill University Health Centre

Diabetes and Eating Disorders: Are we feeding the problem?

Preetha Krishnamoorthy

Suzanne MacDonald

Conflicts of interest

- Nothing to declare

Learning objectives

- By the end of this workshop, the learner should be able:
  - To define eating disorders
  - To identify risk factors for eating disorders in diabetes
  - To recognize red flags that may lead you to suspect an eating disorder in a patient with diabetes

History

- 6th century BC Sushruta
- 1700-1350 BC Ebers papyrus scrolls
- 980-1037 AD Avicenna
- 1425 diabetes in English medical text
- 1675 Thomas Willis (diabetes mellitus)
- 1922 Banting and Best

History

- Medieval era - religious fasting
- 1689 Richard Morton- first mention of ED
- 1873 Sir William Gull and Lasegue - AN
- 1980 coexistence of AN and diabetes described (Fairburn et al, Gomez et al, O'Gorman et al)

Case

- Sophia was diagnosed with type 1 DM at the age of 9
- Seemed to adapt very quickly to the diagnosis
- Parents were very proud of her

Case

- Mom engineer, dad accountant
- Second of 3 children
- Older sister was the “difficult” one, Sophia was the “good girl”
- 1 younger brother
- Did well in school
- DM very well-controlled

Case

- By age 11, showed an interest in MDI
- Regime was changed
- Sophia managed her DM on her own
- Parents never really needed to supervise

Set up for ED

- Predisposing factors
- Trigger factors
- Maintenance factors

Predisposing factors

Predisposing factors

- Chronic disease
- High achieving personality
- Genetics
- Poor self-esteem, psychiatric comorbidity
- Environment
- SES?

Case

- At the age of almost 13, mom called in stating that Sophia was experiencing a lot of hypoglycemias
- Adjusted her insulin down
- Approximately 3 U H for meals, 8 U Glargine (TDD of 17 Units, 0.35 U/kg/day)
- Pubertal and post-menarchal

Case

- Sophia had no explanations for these lows
- Had always been very athletic
- Feeling tired, less active

Trigger factors

- Change of social group (thinner peer group)
- Noted on follow ups that growth had stopped/reached final height
- Brother suspended from school

- Need to do a good HEADS interview

Trigger factors

- Loss of appetite/fear of vomiting
- Dietary change
- Stress
- Abuse

Case

- Decision was made to admit her to hospital

Case

- In hospital, Sophia was found to be extremely bradycardic (HR 45, usually in the 60s)
- Investigations
  - thyroid function
  - morning cortisol
  - TTG

Case

- Patient was extremely angry about being admitted
- Parents became increasingly angry as well, especially her mother
- Weight loss of a few kg

- What are possible causes for acute weight loss in a teen?

Differential diagnosis of acute weight loss

- Medical conditions:
  - Malignancy(brain tumor/lymphoma)
  - Gastritis/PUD
  - IBD
  - Celiac disease
  - CF
  - Metabolic/renal disease
  - Infections (TB/giardiasis)

Differential diagnosis of acute weight loss

- Endocrine disorders(diabetes mellitus/hyperthyroidism)
- Pregnancy
- Manipulation of medications…
- Eating disorder

Remember

- An eating disorder need not be present alone… It can be triggered by the weight loss of a chronic illness and coexist with it…

Differential diagnosis of acute weight loss

- Psychiatric conditions:
  - Depression
  - Schizophrenia
  - Obsessive compulsive disorder
  - Conversion disorder
  - Personality disorder (ie Borderline)

Differential diagnosis of acute weight loss

- Social factors:
  - Chronic substance abuse
  - Chaotic family environment
  - Social protest
  - Career and competitive athletes

Differential diagnosis of acute weight loss in a diabetic patient

- Endocrine disorders(hyperthyroidism)
- Celiac disease
- Manipulation of medications…
- Eating disorder

Case

- Minimal caloric requirements
- Supervised insulin
- Still losing weight
- Caught throwing out food

- Adolescent medicine consulted re a possible ED

A few definitions

Question 1

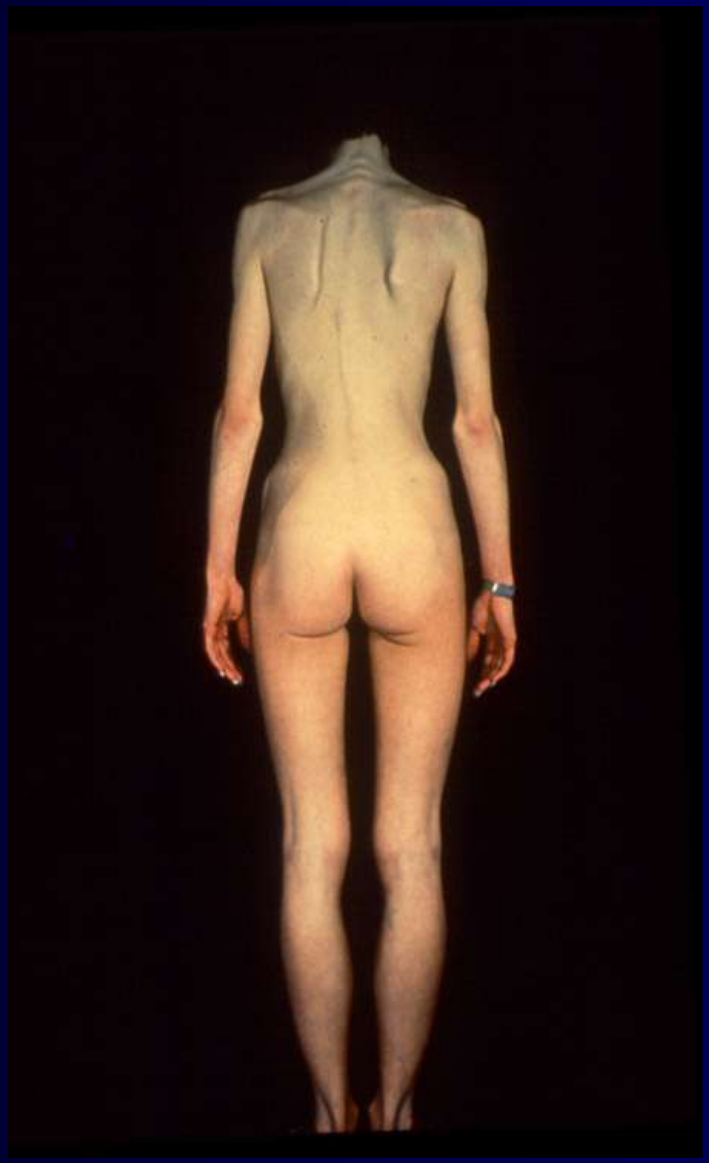
- All the following are DSM V criteria for Anorexia Nervosa(AN) except:
  1. restriction of food/caloric intake leading to weight loss/plateau resulting in much lower weight than expected
  2. disturbance in the way one's body weight, size or shape is experienced
  3. intense fear of becoming obese, even when underweight
  4. in females, absence of three consecutive menstrual cycles

Question 1

- All the following are DSM V criteria for Anorexia Nervosa(AN) except:
  1. restriction of food/caloric intake leading to weight loss/plateau resulting in much lower weight than expected
  2. disturbance in the way one's body weight, size or shape is experienced
  3. intense fear of becoming obese, even when underweight
  4. in females, absence of three consecutive menstrual cycles

Anorexia Nervosa criteria

- Specify RESTRICTIVE vs PURGING type



Question 2

- The DSM V criteria for BN include a minimum of 5 binge eating episodes per week for a minimum of 6 months.

TRUE or FALSE ?

Answer

FALSE!!!

Bulimia Nervosa criteria

- Minimum of 1 binge eating episodes weekly for at least 3 months

Bulimia Nervosa criteria

- A feeling of lack of control
- Compensatory behaviors: self induced vomiting/laxative/diuretic use/strict dieting or fasting/ vigorous exercise to prevent weight gain
- Persistent overconcern with body shape and weight

What if you don’t meet all criteria…

ED, not otherwise specified

- Disorders that do not meet the criteria for any specific ED
  - Wt is in the normal range
  - All criteria met for BN, except for frequency
  - CB after eating normal amounts of food
  - Binge-eating w/o CB
  - Chewing and spitting out food

Diagnostic criteria for diabetes related eating disorder (DRED)

- Insulin omission
- Classic restriction
- Bingeing using other methods


vu sur yahbon.com

Case

- Diagnosed with ED, NOS
- Parents decided to discharge her from hospital
- DYP?

Case

- Discussed with mom the fact that Sophia was caught discarding food
- Excuses, excuses, excuses
- Agreed to follow up with Adolescent Medicine, but wanted a new MD

Case

- Weight loss continued
- Amenorrheic
- Admitted to CHO restricting as a means to “stay healthy”
- Hemodynamic stability kept her out of the hospital

Case

- Came back to DM clinic
- A1C had been in the 7-8% range, was undetectable >14%
- Still on MDI
- Still on apparently very small doses of insulin
- Scared of hypoglycemias

Question 3

- Strict calorie counting, excessive or compulsive exercising, secretive eating rituals and morbid fear of fat are all red flags that should prompt an in depth evaluation for a possible eating disorder

TRUE OR FALSE?

Answer

TRUE!!!

Eating disorder facts common vs worrisome attitudes

Common attitudes

- Occasional binge eating, snacking, skipped meals, restrictive dieting
- Uncomfortable eating with others
- Dissatisfaction with weight and shape
- Fear of gaining weight

Adapted from Adams & Shafer 1988

Red flags

- **Obsessive concern over food, weight, calorie counting**
- **Food avoidance, refusal**
- **Morbid preoccupation with food**
- **Self-induced vomiting/laxative use/diuretic/diet pill use**
- **Excessive/compulsive exercise**
- **Secretive eating/rituals**
- **Morbid fear of fat/obesity**
- **Morbid drive for thinness**

Red flags in DM

- Unexplained lows
- Unexplained weight loss or lack of weight gain
- Hemoglobin A1C above 10%
- Carbohydrate restricting in meal plan
- Discrepant log book from meter/A1C
- Reverting to pre diagnostic symptoms
- Recurrent DKA
- Lack of fingerpricks

Case

- Our concerns:
  - insulin omission to lose weight
  - CHO restricting in order to “minimize” her diabetes

Prevalence Rates

- Estimated rates of 1-10%, largely in Caucasian females
- Number of studies have examined the prevalence of EDs or subclinical disordered eating behaviours (DEB) in youth with type 1 DM
- Differences in sample, screening tools and data collection methods

Prevalence Rates

- Correlations in adolescents with chronic illness and EDs
- Neumark-Sztainer et al.
  - 2149 pts with chronic illness vs. 1381 healthy adolescents
  - higher body wt dissatisfaction, more high-risk wt loss practices in chronic illness pts

Arch Pediatr Adolesc Med. 1995;149:1330-1335.

Prevalence Rates

- Neumark-Sztainer et al.
  - 1021 of 9343 adolescents reported chronic illness or physical disability
  - Prevalence of DEB higher among adolescents with reported chronic illness

Arch Pediatr Adolesc Med. 1998;152:871-878.

Prevalence Rates

- 70 adolescent females and 73 adolescent males with type 1 DM
- AHEAD survey, BMI and A1C from medical records
- 37.9% of females and 15.9% of males reported unhealthy wt control practices
- 10.3% reported insulin omission, 7.4% insulin reduction

Diabetes Care. 2002;25:1289-1296.

Prevalence Rates

- Clinic-based sample of 143 adolescents with T1DM
- Population-based sample 4746 youths
- Overall, pts with T1DM reported less wt dissatisfaction, were less likely to use unhealthy wt control behaviours, more likely to report regular meal consumption

Pediatric Diabetes 2008;9:312-319.

Maintenance Factors

Maintenance Factors

- Individual
  - Temperament
  - Genetics
  - Comorbidity
- Environmental (peers/media/internet)
- Familial (stress/familial relationships)

Why more common with DM?

Why more common with DM?

- Insulin-related weight gain
- Feeling obsessed with food (dietary focus and restraint imposed by a meal plan)
- Feeling out of control and believing that diabetes is controlling one's life
- Developmental effects of a chronic condition on body image/self-concept

Why more common with DM?

- Diabetes provides a unique but dangerous opportunity to control wt
- Disturbances in mood
  - more common in ED
  - more common in T1DM
  - comorbid association?

Personal Control and EDs

- 53 patients with T1DM
- Overall sense of control, desire for control and sense of control over body
- Lower sense of overall control, lower sense of control over one's body assoc. w/ more ED symptoms
- Less overall control assoc. w/ more severe symptoms

Diabetes Care. 2002;25:1987-1991.

Mothers and Daughters

- Girls with T1DM w/ EDs report less support, poorer communication, and less trust in relationships with parents
- Systematic observations of videotaped interactions with moms and daughters show less empathy, affective engagement, and support for age-appropriate autonomy

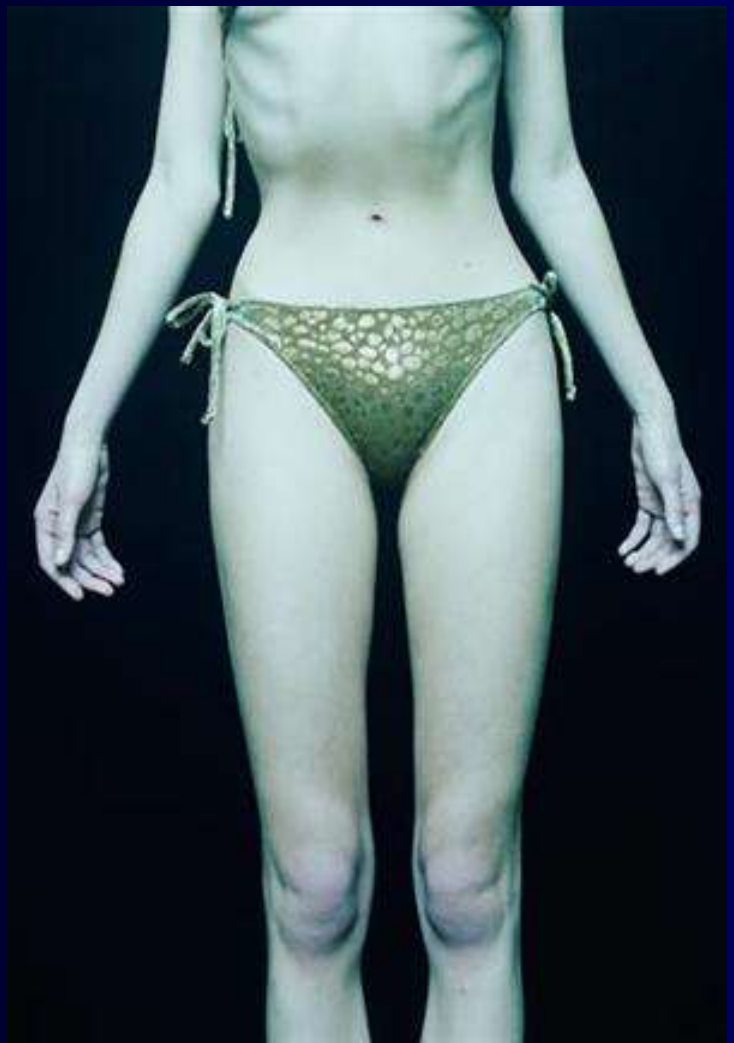
J Psychosom Res 1998;44:479-490.

J Consult Clin Psychology 2002;69:950-958.

RECAP: Keys to Early Diagnosis

- Rapid wt loss or gain
- Recurrent DKA
- Frequent dieting
- Bingeing
- Elevated A1C
- Insulin omission
- Poor body image
- Low self-esteem
- Purging behaviours

What do we look for?



Signs and Symptoms

- Orofacial
- Cardiovascular
- GI
- Renal
- Endocrine
- Skin
- Neurologic
- Hematologic

What can kill this patient today?

What can kill this patient today?

- Hypovolemic shock
- Cardiac arrhythmia
- Refeeding syndrome
- Gastric perforation
- Acute psychiatric emergency
- DKA

Admission criteria

- Hemodynamic / physiological instability:
- Severe bradycardia
- Marked tachycardia
- Irregular pulse or small pulse volume
- Severe hypotension
- Hypothermia
- Significant orthostatic changes

Treatment Goals: DM Team

- Traditional approaches to poor control involving a stricter and more controlled DM management plan may worsen DEB
- Lower time spent on DM management
- Need for more parental intervention

Treatment Goals: DM Team

- Realistic goals as body readjusts to refeeding
- Take away the focus on weight
- Forming a therapeutic alliance with families is one of the keys to successful recovery
- Support the EDs treatment goals

Treatment Goals: ED Team

- Assess and determine most appropriate level of care
- Outpt, intensive outpt, partial/home hospitalization, inpt hospitalization
- Hospitalization when there is physiologic or physical evidence of medical problems

Treatment Goals ED Team

- Medical stabilization and patient/parent education re the severity of patient's condition
- AVOIDING refeeding syndrome
- Slow and gradual reintroduction of the circulatory volume and equally tempered reintroduction of caloric substrates

Treatment Goals: ED Team

- Development of healthier communication patterns, healthier relationships, coping mechanisms
- Individual and family therapy
- Schooling

So What? Mortality Data

- Diabetes alone:
  - 2.2 per 1000 person –years
- Eating disorder alone:
  - 5.1 per 1000 person-years(AN)
  - 1.7 per 1000 person-years(BN)
  - 3.3 per 1000 person-years(EDNOS)
- Concurrence of Diabetes and EDs:
  - 34.6 per 1000 person-years

- Nielsen S et al. Diabetes Care, 2002,
- Arcelus, Jon et al. Archives of General Psychiatry, 2011

Diabetes-related Medical Complications

- Impaired metabolic control
- More frequent episodes of diabetic ketoacidosis
- Earlier-than-expected onset of diabetes-related microvascular complications

Case

- Persistent A1C > 14%
- Switched to tid insulin regime with supervision
- Came in with DKA
- Angry, depressed, refusing to see Adolescent Medicine

Case

- Agreement made to consult Adolescent Medicine at HSJ
- Refusal to transfer DM care there
- Our fear
  - SPLITTING

Case

- Eventually unhappy with care at HSJ
- Requested a transfer back to MCH Adolescent Medicine
- CONDITIONS
  - no doctor shopping
  - follow the rules set forth by the Adolescent Medicine team
  - individual and family therapy

Case

- A1C come down to 12.6%
- Admits to bingeing episodes
- “I know that an eating disorder is a lifelong battle”
- Mom is by her side - good or bad?

Case

- My goals
  - keep her psychologically safe
  - keep her out of hospital for now
  - keep her out of DKA
  - Conclusion of case…

Take home points

- The prevalence of eating disorders is high and on the rise and its coexistence with diabetes is equally on the rise…
- A high index of suspicion is required when thinking of an eating disorder as its manifestations in the diabetic patient can be insidious
- DKA is a real risk in these patients as is an earlier onset of microvascular complications

Take home points

- You are not alone!
- Multidisciplinary team

MERCI!