Two cases of Hypoglycemia

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GREAT FALLS CLINIC

Case 1

A 75 y.o. ♂ wakes up in the middle of the night “confused and disoriented”. His wife called 911 and when the paramedics arrived his CBG was 46 mg/dl. The patient was given I.V. Dextrose and transferred to the Hospital. When he arrived in the E.R he was alert and oriented and his CBG was 76 mg/dl.

The patient is farmer and he had similar symptoms twice in the last year period. In both occasions his symptoms occurred 2-3 hrs after a meal.

Ros: Ø weight changes, Ø nausea or vomiting

Meds: MVI

PMHs: Unrmk.

Surgeries: Bilateral Total Knee replacement.
Hernia repair

Social: No Smoking and **No ETOH.**

Fam. Hx: Maternal Grand father had Type 2 Diabetes
Brother w/ Prostate Cancer

VS: BP 162/87 P 67 R 20

PE: Unrmk.

- Labs:

138	104	12	114
3.7	25	0.9	

AST 42
CA 8.4

Time	CBGs	Insulin (mIU/ml)	C-pept (ng/ml)	Proinsulin (pmol/L)	b-0H Ba
16:35	260				
19:25	121				
22:00	62				
23:59	65				
2:00	60				
4:00	53	9	2.2	75	
6:00	92				
8:00	59				
10:00	49				
10:10	95				
10:20	116				
10:30	114				

Time	CBGs	Insulin (mIU/ml)	C-pept (ng/ml)	Proinsulin (pmol/L)	b-0H B (mg/dl)
16:35	260				
19:25	121				
22:00	62				
23:59	65				
2:00	60				
4:00	53	9 (>3)	2.2 (>0.6)	75 (<5)	1.3 (<2.7)
6:00	92				
8:00	59				
10:00	***49***				
10:10	***95***				
10:20	***116***				
10:30	***114***				

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- Abdomen CT:
  - 2 Liver Cysts
  - Pancreas “Normal”

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Endoscopic U.S.

- 8 x 9 mm hyperechoic mass in pancreatic body consistent with insulinoma.
- On may 2005 , patient had a Laparoscopic enucleation of Benign Insulinoma.
- No recurrent hypoglycemia to date.

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Case 2

A 25 y.o native American female
CC: “ I was really sick”
HCI: Patient was admitted to the medicine unit after a fall at home. This fall was not her First and was preceded by “ weakness” but no LOC.
After being evaluated and cleared by her PCP, she was transferred to the Psychiatric unit on 7/20/2006.
On 7 /22/2006 she developed change in her mental status and again transferred to the Medical unit. She had a normal chest X-ray, blood cultures and was stable until 7/27/2006 When she was again transferred to Psychiatry.
On 7/29/2006 she was found unconscious by the staff and was again transferred to the Hospital. In the **E.D. her CBG was in the low 30’s** and she was given “ several” ampoules of D 50 with only temporary response. An I.V. line was started with D5 and Insulin and C-peptide levels were drawn. She was also started on TPN due to Chronic anorexia, nausea and vomiting.
She did have fever and a TEE was done and showed a blood cloth on the central line catheter Tip. After sedation for this procedure she developed hypoxia and was transferred to the ICU. Her O2 sat improved with w/ 2l NC.

ROS: A 39 points ros was done and the positives were:

Recent Hx of nausea and intermittent vomiting.
6 months hx. of anorexia and weight loss (50-70 lbs in 6-12 months)
Weakness w/ multiple falls
Postural lightheadness
Joint stiffness and inability to close her hands.
Mild Sob and dry cough
Hx of Raynauld phenomenon on both hands when exposed to cold water.

PMHx: Mild mental retardation
Bipolar disorder
Depression
Iron Deficiency anemia (Endoscopy showed telangiectasis " water melon Stomach")
Mild asthma

Surgeries: Previous burn injuries to face and chest.

Meds: Lithium
Effexor 150 mg/day
Remeron 30 mg q.h.s.
Zyprexa 5 mg q.h.s.
Geodon20 mg p.rn.

Fam. Hx: Father had insulin requiring Diabetes
Mother w/ T2 Diabetes taking Glyburide, metformin and Insulin
brother w/ type 1 diabetes

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Social Hx: Patient is disabled, lives w/ her mother . No smoking or ETOH
PE:
BP 143/93 P 107 R30 T 100.1
Heent: No thyroid nodules,
Heart RR S1,S2 and S4 Ø murmurs
Lungs: Few rales on the RLL
Abdomen: Unrmk.
LL: No edema
Skin: Dry , Thick w/ areas of hyperpigmentation and vitiligo.
MS: Hands Contractions.
LABS:
WBC 21.5
HCT 33.6
HB 10.9
Plat: 284
K 3.4 Bun 8 Cr 0.4
AST 46; ALT 102; Alk. Phos 68; Alb 2.0

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Differential Diagnosis:

- Adrenal Insufficiency
- Surreptious Hypoglycemia
- Malnutrition
- Sepsis
- Insulinoma
- TPN
- Scleroderma (?)
- Autoimmune hypoglycemia

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More Labs:

- ANA > 1:320 (nucleolar pattern)
- AntiDNA: Negative
- RA titer: 27 IU/ml
- Aldolase normal
- Smith: Negative
- SS-A, SS-B: negative
- RNP > 80 (0-19)
- C3,C4 levels : Normal
- Centromere AB: Negative
- SCL 70: negative

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..and more labs

- 4/9/2006
  - Prolactin 25.9 ng/ml
  - FSH 4.7 mIU/ml
  - LH 4.2 mIU/ml
  - TSH 1.21 mIU/ml
  - Free T4 0.54 ng/dl
  - TT4 6.5
- 8/10/06
  - ACTH level : 5 pg/ml
  - ACTH stim test: 1.7-16-18 mcg/dl
  - SFU screen : negative

GREAT FALLS CLINIC

date	time	Insulin mIU/ml	c-peptide	glucose
3/17/2006	18:55	29		
7/29/2006	9:35	250	4.2	
8/4/2006	9	2		
8/14/2006	start Fasting			
8/15/2006	20:20	2	0.6	57
	22:35	2		71
8/16/2006	13:46	2	0.7	49
	19:55		0.5	50
8/17/2006	9:00			84
	9:11			87
	9:22			79

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Insulinoma

- 1-2 cases /million/year
- More frequent in women.
  - Average/median onset at 45 years of age
- Associated MEN-1

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Insulinoma

- Pathophysiology
- Symptoms and Signs
  - Whipple’s triad
  - Symptoms of Hypercalcemia
  - Other Sx of excessive hormone production
  - Possible hypoglycemia unawareness
  - Hypoglycemia can occur at any time
  - Seizures are more common in children
  - Weight gain in about 50 % of patients

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Insulinoma

- Pathology:
  - About 80 % of insulinomas are benign single adenomas
  - 10% are multiple adenomas
  - Carcinomas in 8 % of patients
  - Hyperplasia/ Nesidioblastosis is rare in adults (1-2 cases /100 million patients-years)
  - 5 % of insulinomas are associated w/ MEN-1

Insulinoma

- Diagnosis:
  - Fasting Hypoglycemia (< 50 mg/dl=2.8 mmol /L)
  - Plasma Insulin > 5 µU /ml=30 pmol/L
  - C-peptide > 0.75pg/ml=0.25nmol/L
  - Plasma proinsulin > 5 pmol/L
  - 72 hours fast
- Localization:
  - 99% are located in the pancreas
  - Average about 2 cm in diameter
  - 75-90% of insulinomas are identified by palpation at surgery
  - Celiac arteriography
  - Endoscopic U.S.
  - Dual-phase Spiral CT

Treatment:

- Surgery
- Medical therapy
  - Diazoxide 100-200 mg t.i.d.
  - Octerotide
  - Glucagon
  - Glucocorticoids
  - Verapamil, Phenytoin
- QT w/ streptozocin
- Hepatic Embolization

Suggested reading

- Hypoglycemia
  - John E. Gerich, *in Endocrinology; 5th edition 2005 Elsevier*
- Glucose Homeostasis and Hypoglycemia
  - Philip E. Cryer, *in Williams Textbook of endocrinology; 10th edition 2002 Saunders*

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