7-1-2013

Adrenal Insufficiency

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Paging Maury Povich...

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"Gus" goes to Urgent Care

- 4 yo healthy boy
- Emesis & diarrhea x 1 day, cough & congestion x 3-4 days
- Drinking fluids well, urinating well
- VS: Wt 19.5 kg, HR 129, 109/65, T 36.5, nontoxic in appearance
- Dx: Viral gastroenteritis

“Gus” comes to the PED

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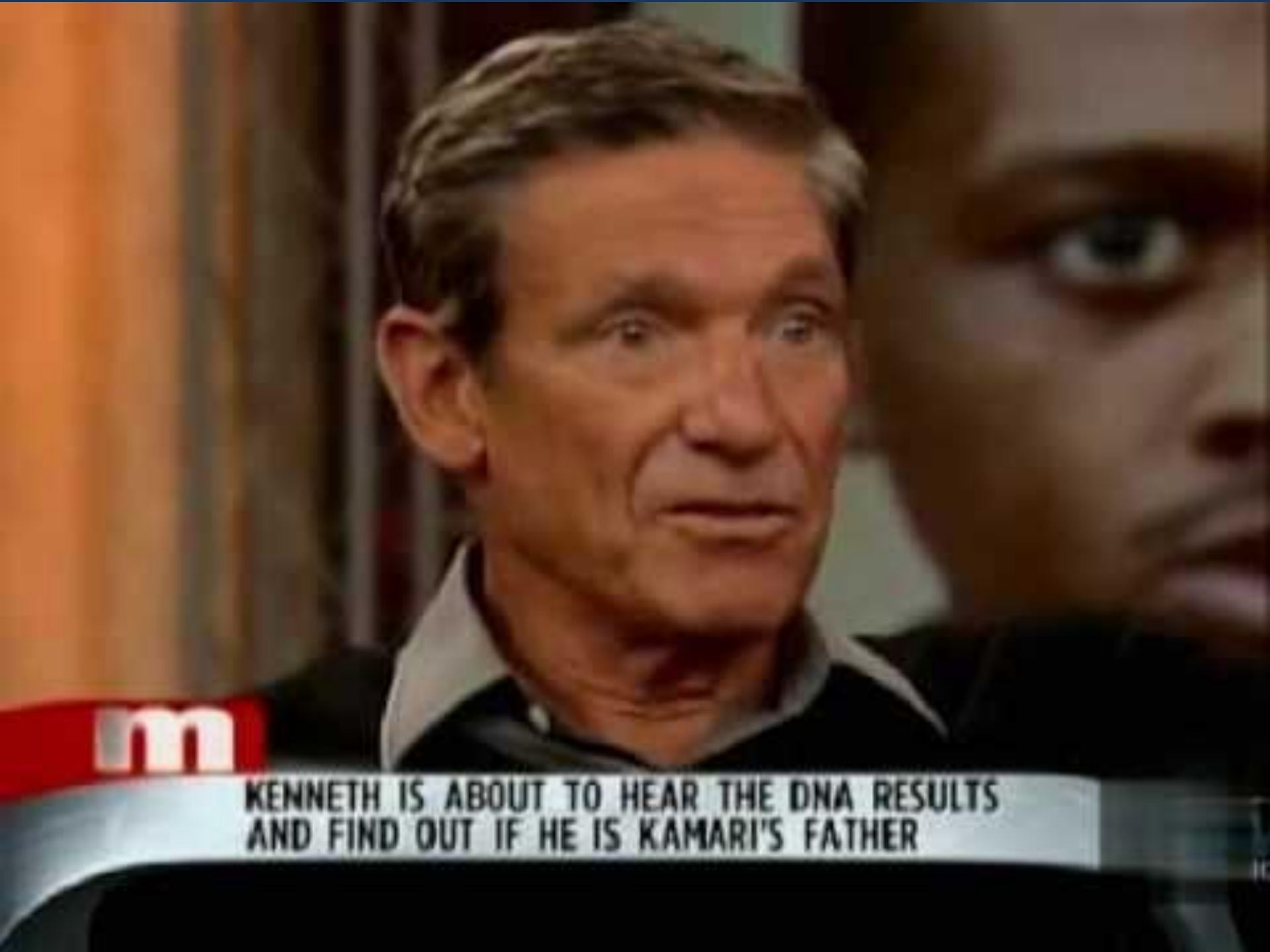
"Gus" comes to the PED

- Emesis & diarrhea x 3 days, sore throat, stopped keeping liquids down this morning
- Mom giving Tylenol at home
- VS: 19.0 kg, HR 110's, T 36.9, no BP, RR 22, SaO2 98% RA, nontoxic appearing
- Tx: ZORT
- Dx: Dehydration 2/2 gastroenteritis


YORK


KENNETH IS ABOUT TO HEAR THE DNA RESULTS
AND FIND OUT IF HE IS KAMARI'S FATHER

"Gus" gets sicker

- Worsening emesis, has not urinated since last night, c/o abd pain
- Mom giving Tylenol, Pepto-bismol
- VS: 18.6 kg, HR 106, T 36.7, RR 28, SaO2 98%, "sleepy" and "ill-appearing", "lies in fetal position" and c/o abd pain but abd exam unremarkable
- Tx: Unsuccessful PO trial, unremarkable KUB, abdominal U/S concerning for hepatitis, labs

"Gus" goes to the PICU

- Na 122, K 5.0, Cl 89, HCO3 13, AG 20, BUN 31, Cr 0.6, Gluc 47
- VS recheck: T 37.2, RR 28, HR 109, BP 84/41, "somnolent"
- Tx: PIV placed for labs, NS bolus 40 ml/kg
- Repeat labs after NS bolus: Na 123, HCO3 8, Gluc 50
- Admit to PICU

"Gus" gets a diagnosis

- On PICU admit note, "hyperpigmented compared with both parents"
- Baseline labs: ACTH >1250 pg/ml, serum cortisol 1.3 ug/ml
- ACTH stimulation test: cortisol 3.4 mcg/dL -> 3.8 mcg/dL @ 60 minutes

Addison's Disease

- Primary adrenal insufficiency
  - Autoimmune adrenalitis
  - Salt-wasting congenital adrenal hyperplasia
  - X-linked adrenoleukodystrophy
  - Adrenal hemorrhage
  - Adrenal infection with tuberculosis, fungus, HIV, CMV
  - Medications
- 75% of are boys
- 50% have an endocrine autoimmune disorder

Adrenal Crisis

- Precipitated by physiologic stress
- Non-specific symptoms:
  - Abdominal pain
  - Nausea & vomiting
  - Hyponatremic , hypochloremic dehydration
  - Hyperkalemia
  - Hypoglycemia
  - Metabolic acidosis
  - Hypotension, shock, or sudden death

5 S's of Adrenal Crisis

- Salt
- Sugar
- Steroids
- Support
- Search for a cause

5 S's of Adrenal Crisis

- Salt
  - NS bolus 20 ml/kg, repeat if necessary
  - D5 NS @ 1.5-2 x's maintenance

5 S's of Adrenal Crisis

- Sugar
  - Glucose for symptomatic hypoglycemia

    Infants: 5 mL/kg of D10

    Children: 2 mL/kg of D25
  - Remember the Rule of 50

5 S's of Adrenal Crisis

- Steroids
  - For mild illness, can double or triple maintenance hydrocortisone
  - If unable to tolerate PO, IM hydrocortisone 50 mg/m^2
  - Stress dose IV hydrocortisone 100 mg/m^2
    - Neonates: 25 mg
    - Toddlers: 50 mg
    - Children: 75 mg
    - Adolescents: 100 mg

5 S's of Adrenal Crisis

- Support
  - May require vasopressors for hypotension
  - Hyperkalemia can be fatal
  - Consider PICU admission

5 S's of Adrenal Crisis

- Search for a cause
  - POC glucose, serum electrolytes
  - Extra blood for cortisol, ACTH, renin, aldosterone
  - Diagnostic studies for underlying infection

Summary Points

- A lot of days in the PED are haystack days
- Take a page from Maury – ask about parents and appearance
- Remember the 5 S's of treating adrenal crisis

Questions?