



# HOLY C.O.W.!

## IT'S...

Clinical Question of the Week #15  
October 6th, 2008 through October 13th,  
2008

Please e-mail your answers to Kuo, Tim, Wendy, and Kevin ([klian@mednet.ucla.edu](mailto:klian@mednet.ucla.edu); [tprovias@mednet.ucla.edu](mailto:tprovias@mednet.ucla.edu); [wsimon@mednet.ucla.edu](mailto:wsimon@mednet.ucla.edu); [kbreger@mednet.ucla.edu](mailto:kbreger@mednet.ucla.edu)) by 0800 on Monday, October 13th, 2008. The resident or intern with the most correct answers at the end of each month will receive a prize!

**Case:** A 36-year-old man is transferred from another medical center for evaluation of chronic abdominal pain and failure to thrive. Over the past several months, the patient has had progressively increasing fatigue, malaise, decreased appetite, and generalized weakness. He has also had intermittent abdominal pain associated with nausea and occasionally vomiting. He has lost 15lbs over the past six months unintentionally. His other symptoms include depression over the past year. He was noted at the other medical facility to have somewhat low blood pressures and on occasion was found to be orthostatic, which was attributed to poor oral hydration. Laboratory data accompanying the patient is notable for electrolytes as follows: Na 129, K 5.3, Cl 106, bicarbonate 16, BUN 10, Cr 0.8, glucose 97. A skull film also accompanies the patient, which is shown below. Physical examination is notable for mild hypotension, tan skin (from living in Oxnard, per the patient), and flat affect.

\*\*Special thanks to Grant Chu for providing the image for this case.



### Questions:

#### 1. What is the diagnosis?

Primary adrenal insufficiency, or Addison's disease, consists of a failure of bilateral adrenal glands, and may present with various levels of severity ranging from adrenal crisis with hemodynamic collapse to a chronic insidious course. Signs and symptoms of

adrenal insufficiency depend of the rate and extent of loss of adrenal function, whether mineralocorticoid function is preserved, and the degree of precipitant stress.

Adrenal crisis occurs usually in a previously undiagnosed patient who has been subject to an acute infection or major stress, a failure to give stress-dose steroids in setting of planned stressor (i.e. surgery) or incident infection, acute bilateral adrenal infarct or hemorrhage, abrupt withdrawal of chronic glucocorticoids, or rarely pituitary apoplexy. The predominant sign is shock, and symptoms may also include nausea, vomiting, abdominal pain, weakness, or coma. Fever is an indication of infection and a source must be identified and treated.

Chronic primary adrenal insufficiency is usually more insidious in onset, and may manifest signs and symptoms of glucocorticoid, mineralocorticoid, and possibly androgen deficiency (in women). Symptoms include malaise, lassitude, fatigue (worse with exertion, better with rest), anorexia with weight loss, nausea, vomiting, abdominal pain, low blood pressure, low blood sugar, hyponatremia, hyperkalemia, and hyperpigmentation of the skin (see below, a finding that is not found in secondary/tertiary adrenal insufficiency).

Psychiatric features of depression, mild cognitive impairment, to psychosis may also be present. (0.5)



Hyperpigmentation

**2. Who described this condition, and what was the most prevalent cause of this condition at the time? What is it now?**

Thomas Addison (1793-1860) was a renowned physician and scientist who trained at Guy's Hospital in London, and was a fellow of the Royal College of Physicians. He was fascinated by skin diseases and described the findings of hyperpigmentation associated with primary adrenal insufficiency. His treatise, "*On the constitutional and local affects of disease of the supra-renal capsules*" in 1855 was the first description of the disease that was later named for him.

At the time, the most prevalent cause of Addison's disease was tuberculous adrenalitis with bilateral adrenal destruction, now only accounting for 7-20 percent of cases. The most prevalent cause of Addison's disease today is autoimmune adrenalitis, which includes the polyglandular autoimmune syndromes. Other causes include other infectious causes (fungal, HIV, rarely syphilis or African trypanosomiasis), hemorrhage/infarct, metastatic disease, severe inflammatory disease, and drugs. (1)

**3. What is the finding shown in the image?**

Bilateral auricular cartilage calcification, thought to result from chronic cortisol deficiency, is found rarely in long-standing primary or secondary adrenal insufficiency. Interestingly, it is only found in men, and does not improve with glucocorticoid replacement. (0.5)

**4. How is the diagnosis made?**

Confirmation of the clinical diagnosis involves: 1) demonstrating inappropriately low cortisol secretion; 2) determining whether cortisol deficiency is dependent on or independent of ACTH deficiency; and 3) seeking a treatable cause of the primary disorder (i.e. infection, adenoma, etc.). Cortisol is low; cosyntropin stimulation test is abnormal. Morning ACTH level is high in primary adrenal insufficiency, while it is low in secondary or tertiary adrenal insufficiency. A CRH test is used to distinguish between secondary (no response) and tertiary adrenal insufficiency (strong response). (1)