

A 5-year-old girl is brought to the physician for "wetting the bed." Since age 3, she has been completely toilet-trained during the day and at night. However, for the past 2 weeks, the girl has wet the bed nightly and has slept poorly from trying to make it to the bathroom multiple times each night. She is also more thirsty than usual, urinating more often during the day, and having "accidents" at school. Review of systems is positive for fatigue and "crankiness" and negative for dysuria, hesitancy, and urgency. She has had no major illnesses and has met all developmental milestones. One month ago, the family moved to a new house after her brother was born. Vital signs are normal. Weight and height are at the 25th percentile. Physical examination shows a tired-appearing girl. Mucous membranes are dry. The rest of the examination is unremarkable. Which of the following is the most likely explanation for this patient's symptoms?

- ☐ A. Autoimmune destruction of the pancreatic beta cells
- ☐ B. Bacterial infection of the bladder
- ☐ C. Behavior regression from changes in the home environment
- ☐ D. Delayed maturation of sphincter control
- ☐ E. Impaired arousal during sleep
- ☐ F. Impaired renal tubule response to antidiuretic hormone

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- ☒ A. Autoimmune destruction of the pancreatic beta cells [62%]
- ☐ B. Bacterial infection of the bladder [1%]
- ☐ C. Behavior regression from changes in the home environment [28%]
- ☐ D. Delayed maturation of sphincter control [0%]
- ☐ E. Impaired arousal during sleep [0%]
- ☐ F. Impaired renal tubule response to antidiuretic hormone [9%]

Proceed to Next Item

Explanation:

User Id: [REDACTED]

Causes of secondary enuresis	
Etiology	Associated symptoms
Psychological stress	• Behavior regression, mood lability
Urinary tract infection	• Dysuria, hesitancy, urgency, abdominal pain
Diabetes mellitus	• Polyuria, polydipsia, polyphagia, weight loss, lethargy, candidiasis
Diabetes insipidus	• Polyuria, polydipsia
	• Sporing, dry mouth, fatigue, hyperactivity

Explanation:

User Id: 

Causes of secondary enuresis	
Etiology	Associated symptoms
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Urinary tract infection	<ul style="list-style-type: none">• Dysuria, hesitancy, urgency, abdominal pain
Diabetes mellitus	<ul style="list-style-type: none">• Polyuria, polydipsia, polyphagia, weight loss, lethargy, candidiasis
Diabetes insipidus	<ul style="list-style-type: none">• Polyuria, polydipsia
Obstructive sleep apnea	<ul style="list-style-type: none">• Snoring, dry mouth, fatigue, hyperactivity, irritability

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Enuresis is defined as urinary incontinence in children age ≥ 5 and further characterized as primary or secondary. Children who have never achieved dryness have primary enuresis. Secondary enuresis is the return of incontinence after ≥ 6 months of dryness and results from psychological stress or a medical problem that requires further evaluation.

This patient's enuresis is occurring in the setting of **polyuria** and **polydipsia**, which are red flags for **type 1 diabetes mellitus (DM)**. Type 1 DM has a bimodal onset, with patients typically presenting at **age 4-6 years** or at **early puberty**. When hyperglycemia exceeds the renal threshold for glucose, the resultant glucosuria leads to osmotic diuresis, polyuria, and dehydration.

The next steps in evaluation include **urinalysis**, serum chemistry, hemoglobin A1c, and blood gas analysis. When euglycemia is achieved with **insulin** therapy, glucosuria and polyuria should resolve, curing the enuresis.

(Choice B) Although occult urinary tract infections can cause enuresis, most patients experience dysuria, hesitancy, and urgency, making this diagnosis less likely.

(Choice C) Psychological stress (eg, moving to a new home, birth of a sibling, parental divorce) can cause behavioral regression and enuresis. However, it would not cause polyuria and polydipsia.

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(Choice D) Maturational delay of sphincter control may contribute to primary enuresis. This patient already developed sphincter control because she was previously continent.

(Choice E) Obstructive sleep apnea impairs sleep arousal and can therefore result in nocturnal enuresis. Associated symptoms include fatigue and irritability. However, this patient was appropriately waking and attempting to use the toilet. The fatigue and irritability are results of disrupted sleep and the underlying illness.

(Choice F) Nephrogenic diabetes insipidus presents with copious excretion of dilute urine and polydipsia. In contrast to type 1 DM, it is uncommon in children and therefore less likely to cause this patient's symptoms.

Educational objective:

Polyuria and polydipsia are classic features of new-onset type 1 diabetes mellitus. Nocturnal enuresis can be a presenting symptom in toddlers.

References:

1. [Characteristics at diagnosis of type 1 diabetes in children younger than 6 years.](#)
2. [Clinical presentation of type 1 diabetes.](#)