

# the Clinical Chemist

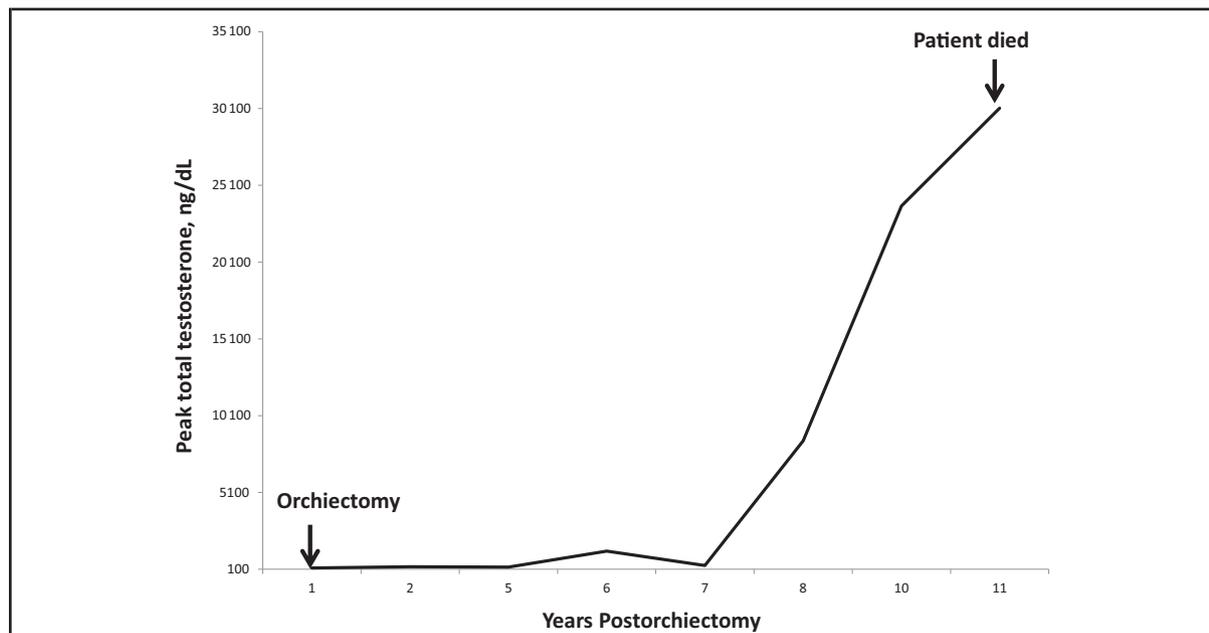
What Is Your Guess?

## Highest Testosterone Concentration Ever: Pathology or Laboratory Error?

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### CASE DESCRIPTION

The laboratory obtained a testosterone result of 30 117 ng/dL for a 51-year-old man and called the medical director to assess whether this value was feasible because it would represent the highest testosterone concentration ever reported by the laboratory. The patient was an avid runner with a history of a right testicular mass and orchiectomy 10 years previously. The patient was supplemented with testosterone cypionate (200 mg/2 weeks). The results for follicle-stimulating hormone and luteinizing hormone were unremarkable.



**Fig. 1.** The kinetics of peak total testosterone concentrations measured after radical right orchiectomy.

Five years postorchiectomy, the tumor relapsed and extensively metastasized to the lung, liver, and retroperitoneum, requiring multiple surgeries.

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## QUESTIONS

1. What conditions are associated with the extremely high testosterone concentrations?
2. Could exogenous testosterone account for this concentration?
3. If pathological, what is the prognosis for patients with this condition?

*The answers are below.*

## ANSWER

Increased testosterone concentrations are seen in individuals with exogenous testosterone supplements and sex hormone-producing adrenal tumors. At supraphysiological doses, exogenous supplements could raise serum testosterone concentrations by approximately 2- to 6-fold (1–3). This patient had a metastatic Leydig cell tumor diagnosed 5 years postorchietomy. Testosterone concentrations began to increase dramatically around this time (Fig. 1). Malignant Leydig cell tumor is refractory to chemotherapy and radiotherapy (4). The median survival time of patients with malignant Leydig cell tumor is 2 years (5).

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ensuring that questions related to the accuracy or integrity of any part of the article are appropriately investigated and resolved.

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