An Elderly Man with a Calcified Brain
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CASE DESCRIPTION
A 63-year-old man presented with gait difficulty, slowing of all motor activity, and memory loss. He had been diagnosed and treated for Parkinson disease over the previous year but without any improvement. A computed tomography scan showed extensive calcifications throughout the brain (Fig. 1). The serum calcium concentration was 3.1 mg/dL (0.78 mmol/L) [reference interval, 8.4–10.2 mg/dL (2.0–2.6 mmol/L)].

QUESTIONS
1. What conditions might cause such severe brain calcification?
2. What other laboratory tests should be considered for this patient?
3. What is the likely diagnosis?

The answers are below.

ANSWERS
Florid intracranial calcification in children is caused by birth anoxia, Cockayne disease, tuberous sclerosis, or infections such as toxoplasmosis or cytomegalovirus.

In adults, severe brain calcification along with clinical findings of Parkinson disease can be caused by longstanding hypoparathyroidism or pseudohypoparathyroidism (1). The laboratory test results showed the following: severe hypocalcemia; serum phosphorus, 5.9 mg/dL (1.9 mmol/L) [reference interval, 2.5–4.5 mg/dL (0.81–1.45 mmol/L)]; parathyroid hormone, 2.2 pg/mL (0.23 pmol/L) [reference interval, 15–65 pg/mL (1.6–6.8 pmol/L)]. The patient was diagnosed with idiopathic hypoparathyroidism and treated with calcium and vitamin D supplementation (2).

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References

News & Views

“Teaching for the Masses”—The e-Learning Revolution

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The traditional mechanism by which education is delivered has changed. In today’s competitive business environment, accessing a product via only a single route is no longer acceptable to the consumer, and education is no exception. Universities are increasingly embracing the concept of e-learning by hosting so-called massive open online courses (MOOCs). This report, based on an article by M. Mitchell Waldrop, briefly discusses the reasons why universities are now offering such courses and how laboratory medicine could also benefit from adopting a similar approach (1).

Drivers for Change

The origin of MOOCs may be traced back to Stanford University in the early 1990s. Then, the project was driven by a handful of individuals in research centers who were dedicated to developing open-source education initiatives. In the years since, the explosion of the Internet and technological advances in broadband, smartphones, and the growth of social media have made MOOC a reality. The financial crunch has also proved to be a major factor in driving this change. In the US, the higher-education system is facing a financial “time bomb,” with spiraling tuition fees contributing to unacceptable levels of student debt. Thus, universities are coming under increasing pressure to deliver courses to more students in a cost-effective manner.

MOOC: The Solution?

The obvious advantage of online courses is the sheer scope of their influence; a single lecture or course may be accessible by countless individuals anywhere at any one time. That serves not only to expand the reach of the campus but also to ease the workload on educators and maximize their output. Advances in software have allowed more-efficient data collection, enabling more-effective and more-elaborate means of providing feedback to students. This change not only enriches the students’ learning experience but also helps shape their studying behavior; however, the responsibility ultimately remains with the individual to complete the courses. Therefore, the success of online courses is highly dependent on the quality of the material and the ability to connect with the individual to enhance the learning experience. In 2010, Bill Gates said, “Five years from now on the Web for free you’ll be able to find the best lectures in the world. It will be better than any single university.” Perhaps in the future, the only activity remaining on campus will be the parties!

Closer to Home

In May 2011, the Journal launched the Clinical Chemistry Trainee Council (CCTC), a website that houses learning resources to aid clinical laboratorians in their professional development. At the time of writing, the CCTC has over 4000 registrants who log on from 134 countries. Unlike university-based e-learning tools, the CCTC is nonprofit.

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2 Nonstandard abbreviations: MOOCs, massive open online courses; CCTC, Clinical Chemistry Trainee Council.