Cultural Impact on Medication Instructions: The Case of the Turkish Teaspoon

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Abstract: Medication errors are preventable events related to inappropriate medication use that could potentially result in patient harm. Here we present a patient encounter that has exemplified the importance of appropriate communication and the inevitable role of every individual in ensuring appropriate prescription medication use. Multidisciplinary efforts are required to ensure patient safety in today’s systems based practice. This case highlights cultural barriers to the practice of medicine and the growing need to explore and address them appropriately.

Key Words: cultural impact, medication error, medical translators

CASE PRESENTATION

A 19-year-old Turkish woman presented with delayed and incomplete puberty and hirsutism. She also reported poor physical constitution, tiring after walking only half an hour, and an inability to gain weight. Her childhood was normal, and she developed appropriate sexual body hair by age 14 years, but her breasts remained small. Facial hair slowly developed to the point that she shaved daily. Menarche did not occur until age 18 years and remained very light and infrequent, every 2 to 3 months. On exam, she was 5 feet tall, 94 lb (body mass index, 18.4), with blood pressure of 102/62. Breasts were Tanner stage 3. She was hirsute with a Ferriman-Gallwey score of 2 on the upper lip and 4 on the chin. She politely refused a genital exam, reporting that a gynecologist 3 years prior informed her that she was anatomically normal. Her history was obtained via a certified in-person translator provided by our institution, a pleasant woman also from Turkey.

Along with a moderately elevated testosterone level, she had a follicular-phase, early-morning, nonstimulated 17-hydroxyprogesterone (17OHP) level of 4976 ng/dL (normal, <185). Genetic testing for 21-hydroxylase deficiency revealed heterozygosity for 2 common mutations in CYP21A2: Q318X, which is associated with classic salt-wasting CAH, and P30L, which is associated with a less severe form of CAH and is estimated to allow the enzyme to work at approximately 10% full capacity. Thus, we diagnosed a very severe form of late-onset CAH because of near-total 21-hydroxylase deficiency.

The initial goal of treatment is relatively simple: dexamethasone (or other glucocorticoid) by mouth daily to suppress the 17OHP to 500 to 1000 ng/dL. Recommended target levels vary, but the idea is to not oversuppress the adrenals and cause iatrogenic adrenal insufficiency. She was prescribed dexamethasone 0.25 mg (one-half of the smallest available tablet of 0.5 mg). She had difficulty breaking the tiny pills so took a whole pill on her own daily. She felt great! She gained 2 lb in a month, reported more energy, and had 2 menses in 2 months. However, her 17OHP level was 40 ng/dL, which was too suppressed. Thus, she was switched to liquid dexamethasone to allow for the smaller dose. The prescription read: “Dexamethasone 0.5 mg/5 ml solution, take 2.5 ml po daily.”

Six weeks later, she returned distressed, orthostatic, weak, and with no menses. She had dropped 6 lb to a body mass index of 17.6; her blood pressure was 90/54. The 17OHP level was back up to 3674 ng/dL. What had happened? She swore compliance; 0.25 mg of dexamethasone should have been plenty. The instructions on the bottle were clear: “Take one-half teaspoon daily.” Every amateur chef knows that a teaspoon is 5 ml. Why was she worse than when we started?

Fortunately an in-person Turkish woman was provided as our certified translator. She was familiar with both the Turkish customs and language. Suddenly, during my inquiry, the translator’s eyes opened wide. “I know the problem!” she said. “Have you ever seen a Turkish teaspoon?”

DISCUSSION

The National Coordinating Council for Medication Error and Prevention has approved the following as its working definition of medication error: “…any preventable event that may cause or lead to inappropriate medication use or patient harm, while the medication is in the control of the health care professional, patient, or consumer. Such events may be related to professional practice, health care products, procedures, and systems including: prescribing; order communication; product labeling and nomenclature; compounding; dispensing; distribution; administration; education; monitoring; and use.” The Institute of Medicine 2006 report states that approximately 1.5 million preventable adverse drug events occur each year.2 More than one-third of these take place in outpatient settings at a cost approaching $1 billion annually. Dispensing error refers to medication errors linked to the pharmacy or other health care professional who dispenses the medication. These errors have been classified into errors of commission (e.g., dispensing the wrong medication) and errors of omission (e.g., failure to counsel the patient or complex language on the label).

A large proportion of outpatient medication errors, however, have been shown to occur as a result of patients or caregivers not administering a medicine as directed. For decades, the Food and Drug Administration has recommended against the use of household teaspoons or tablespoons to administer liquid medications. However, these terms are still found on package instructions for many nonprescription medications. It is dangerous to assume that patients are universally aware that the term teaspoon actually

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refers to a standardized measuring spoon that holds 5 ml. The volumes of actual teaspoons found in different households range from 1.5 to 9 ml. In Turkey, as in many other countries, the metric system is used to accurately measure volume, even in cooking. Spoons used to stir tea, called teaspoons, are small (Fig. 1), typically holding approximately 2 ml of liquid.

A study on adults’ interpretation of prescription drug labeling instructions for children’s liquid medications showed that 28% of caregivers misinterpreted liquid formulation dosage measurements. Spoonful, teaspoon, and tablespoon were often misunderstood to be interchangeable. The study demonstrates the potential for overdosing (tablespoon in place of teaspoon) or undertreatment. For drugs with a narrow therapeutic margin, these misinterpretations could lead to serious adverse events. A study that compared measuring accuracies with various tools for liquid medications concluded that subjects were more likely to measure an acceptable dose with an oral syringe when compared with alternative measuring devices including droppers, teaspoons, or dosing cups. Further studies are needed to determine what health care consumers find to be the most helpful, easy, and accurate way for measuring liquid medicines.

Our case illustrates the need for such studies and exemplifies the need in using the most accurate volumetric measures that we already have.

We would like to acknowledge the role of our professional language interpreter in identifying this error. Professional language interpreters, or medical translators, play a major role in patient care when dealing with cross-cultural barriers. Their vital role is depicted in not only word-to-word translation but also identifying key cultural factors such as in our patient. Perhaps if the translator had not promptly recognized the problem, our patient would have been discharged on a higher dose of the medication and would have continued to use the “Turkish teaspoon” to measure. Review of the literature finds plenty of examples that confirm the fact that appropriate use of translators enhances overall clinical experience of patients and adherence to office visits.

In conclusion, it is a joint responsibility of prescribers and pharmacists as dispensers of medications to provide proper verbal instructions regarding medication use to ensure patient safety.

OUTCOME

Our patient eventually did well. We called her pharmacy which, after some harsh words on my part, provided my patient with an appropriate measuring syringe and instructions. We eventually found the correct dose for her. She blossomed and began to ask questions about fertility. This patient has taught us to stick with metric measurements on medication instructions and we also learned the irreplaceable value of a well-trained and culturally knowledgeable translator.

REFERENCES


FIGURE 1. Turkish Demitasse teacup and teaspoon. Although sizes vary widely, the average Turkish teaspoon is roughly half the size of a standardized American teaspoon.