



## The bias of word choice and the interpretation of laboratory tests

In the current sociopolitical environment in the United States, the slogan “words matter” has become a battle cry for several groups and causes, emphasizing that our choice of words can influence the way we assess a specific person or situation. We are not immune to the subliminal bias of words, even as we evaluate such seemingly objective components of clinical management as laboratory test results.

Several years ago, I was supervising teaching rounds on a general medicine service. It was the first rounds of the month, and the patients were relatively new to the residents and totally unknown to me. One patient was an elderly man with weight loss, fatigue, weakness, and a history of excessive alcohol ingestion. His family had corroborated the last detail, but he had stopped drinking a long time before his admission. He had normal creatinine, minimal anemia, and markedly elevated and unexplained “liver function tests.” Liver biopsy was planned.

As we entered his room, we saw a gaunt man struggle to rise from the bedside chair to get back into bed. He rocked several times and then pushed himself up from the chair using his arms. Then, after a few short steps, he plopped back into bed and greeted us. His breakfast tray was untouched at the bedside. I introduced myself, we chatted for a short while as I examined him in front of our team, and we left.

In the hallway I asked, “Who would like to get an additional blood test before we do a liver biopsy?” Without waiting for a response I asked a second question, “What exactly are liver function tests?”

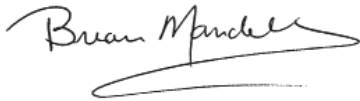
Words do matter, and they influence the way we analyze clinical scenarios. It could be argued that a complete and careful history would have established that our patient’s fatigue and weakness were due to proximal muscle weakness and not general asthenia, and that detailed questioning would have revealed that his weight loss was mainly from difficulty in swallowing without a sense of choking and coughing. But faced with an elderly man, a likely explanation for liver disease, and markedly elevated aspartate and alanine aminotransferase (AST and ALT) levels, there was premature closure of the diagnosis, and the decision was made to obtain a liver biopsy—which our hepatology consultants surely would not have done. I believe that a major contributor to the premature diagnosis was the choice of the words “liver function tests” and the default assumption that elevated serum levels of these enzymes always reflect liver disease.

Aminotransferases are fairly ubiquitous, likely present in various concentrations in all cells in our body. AST exists in mitochondrial and cytosolic forms, and ALT in the cytosol. The concentration of ALT is higher in the liver than in other organs, and its enzymatic activity is suppressed by hepatic exposure to alcohol. Both enzymes are present in muscle, and although AST is more abundant in cells other than hepatocytes, the longer serum half-life of ALT may result in roughly equal serum levels in the setting of chronic muscle injury such as myositis (the true diagnosis in our weak patient).

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While a meticulous history and examination would indeed have led to the diagnosis of muscle disease in this man, they alone could not have determined whether he had coexistent liver and muscle disease. And this is a real challenge when acute muscle toxicity and liver toxicity are equally possible (eg, statin or immune checkpoint autoimmune tissue damage, or after significant trauma).

There are many nuances in the interpretation of even the most common laboratory tests. In this issue of the *Journal* (page 612), Agganis et al discuss liver enzymes (a term slightly more acceptable to me than liver function tests). In future issues, we will address the interpretation of other laboratory tests.



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