Letter to the Editor

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ICD code specific reference ranges

ICD kodlarına özel referans aralıkları

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Dear Editor,

I was asked by my colleagues to investigate total and direct bilirubin levels of two patients that were slightly higher than the upper reference limit. The results were repeated in another auto-analyzer but did not change. Internal quality results were validated daily for each instrument and were nearly perfect; external quality results for the previous month were satisfactory. The results were suspicious because these two young patients were actually not ill. On the contrary, they were admitting to our hospital in order to “prove that they were healthy”.

I observed that these two individuals were recorded in the laboratory information system with a specific ICD-10 code Z02 namely “Encounter for administrative examination” followed by a second numeric code to define the group admitting for a particular occupation. So, I started my search by listing the test results of all entries with the same ICD-10 code. The admittances were all young men. Seemingly, a standard panel of laboratory tests was requested including complete blood count test, serum chemistry, urinalysis and sedimentation. Serum biochemistry parameters were composed of glucose, blood urea nitrogen, creatinine, liver function tests and lipid profile. As consulted, some results were distinctive: results of all parameters were within the reference ranges except total and direct bilirubin. Interestingly in some cases high lactate dehydrogenase accompanied the bilirubin pair indicating intravascular hemolysis.

I felt “intravascular hemolysis” a best fitting explanation to the situation, so in the next step I decided to investigate a possible reason for it. After participating some outpatient

examinations. I learned that prior to medical health-check, all nominees had to pass a written exam followed by a physical exam including a long-distance running. I simply performed a PubMed search with key words “sports” and “hemolysis” and luckily found a paper which defined a rise in bilirubin levels of athletes [1]. They also reported that results of other measured biochemical and hematological parameters of athletes were within accepted ranges of reference values for general population, similar to our results. The elevation in bilirubin was thought to be caused by mechanical factors, namely “marching hemolysis”; damage caused by muscle work or red blood cell squeezing through capillaries. In conclusion of their paper they suggested to use a dedicated reference range for total bilirubin concentration in relation to the group of athletes.

I closed the consultation by citing the open access paper, with a note that marching hemolysis could be a “possible” explanation. Trying to prove my assumption needs a detailed study, which would be a standpoint for an evidence-based application to use reference ranges dedicated to individuals defined by the mentioned specific ICD-10 code.

Unfortunately, we can define reference ranges solely for age and gender with the current software. I believe this is a limitation. Not all, but some ICD-10 codes define perfect population subgroups. For example, about a year ago, I tried to embed thyroid function tests reference ranges for newborns with low birth weight but failed. P07 (Disorders of newborn related to short gestation and low birth weight, not elsewhere classified) defines the subgroup. Later, I faced the same problem with thyroid function tests reference ranges for pregnant patients; defined by the ICD-10 code Z33 (Pregnant state). I believe anything is possible in digital means and ICD-10 option in defining reference ranges deserves attention to serve patients.

Conflict of interest: None.

Reference

1. Witek K, Ścisłowska J, Turowski D, Lerczak K, Lewandowska-Pachecka S, Pokrywka A. Total bilirubin in athletes, determination of reference range. *Biol Sport* 2017;34:45–8.

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