

Evaluating Improvement Rates Correctly after Treatment Interventions in Rheumatological Diseases

Romatolojik Hastalarda Tedavi Sonrası Değerlendirmede İyileşme Oranlarını Doğru Değerlendiriyor muyuz?

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The Ankylosing Spondylitis Assessment Study (ASAS) 5 out of 6 (5/6) response criteria evaluation scale measures the clinical improvement of AS patients with regard to a specific treatment. This scale consists of six parameters: the patient global assessment score, pain, function, inflammation, spinal mobility, and C-reactive protein (CRP) levels. At least five of these parameters should improve by at least 20% to fulfill the ASAS 5/6 improvement criteria,^[1,2] and improvement in the first four criteria is judged by a simple mathematical approach:

$$\frac{[(\text{The baseline evaluation point}) - (\text{the second evaluation point})]}{(\text{The baseline evaluation point})} \times 100$$

For example, if the baseline patient global assessment score of an AS patient is 60 and the second evaluation point 40, we can calculate the improvement rate as follows:

$$[(60-40)/60] \times 100 = 33\%$$

This measurement is exactly true for the parameters that have a starting value of zero.

However, the evaluation process for CRP is different because a CRP level of 0.5 mg/dl is accepted as normal during laboratory evaluations. If we use the same simple mathematical approach to measure

the improvement rate of CRP, the results would be incorrect. The following two examples show how this could take place:

Example 1: If we use the usual formula for a patient with a baseline CRP level of 2 mg/dl and the CRP level then increases to 1.5 mg/dl after treatment intervention, the improvement rate would be calculated as follows:

$$[(2.0-1.5)/2.0] \times 100 = 25\%$$

However, since the normal value of CRP was 0.5 mg/dl, the following mathematical improvement calculation should be used:

$$[(2.0-0.5)-(1.5-0.5)/(2.0-0.5)] \times 100 = 33\%$$

Example 2: If the baseline CRP level was 1 mg/dl, and the value increase to 0.5 mg/dl. The commonly used formula would be calculated as follows:

$$[(1.0-0.5)/1.0] \times 100 = 50\%$$

However, the recommended approach is:

$$[(1.0-0.5)-(0.5-0.5)/(1.0-0.5)] \times 100 = 100\%$$

The main aim of the second approach is to correctly determine the improvement rate in the parameters with a normal value range of greater

than zero. This condition is not only true for the parameters of the ASAS 5/6 response criteria but also for other evaluation sets with the same parameters. For example, this is usually valid for laboratory parameters. Therefore, clinicians should take the starting value of parameters into account during the evaluation of treatment improvement rates in rheumatological diseases.

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