

Tear clearance measurement in patients with dry eye syndrome using quantitative lacrimal scintigraphy

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Objective: The aim of this study was to evaluate the tear clearance in patients with dry eye syndrome using quantitative lacrimal scintigraphy. **Materials and Methods:** We investigated 21 patients (42 eyes; 18 women, 3 men; mean age, 63.19 ± 13.33 years) with dry eye syndrome. Additionally, for the sake of comparison, 12 normal subjects of the same age group (24 eyes; 10 women, 2 men; mean age, 68.25 ± 2.63 years) were included. Lacrimal scintigraphy, Schirmer-1 test, BUT, and rose bengal ocular surface vital staining were performed in these cases. **Results:** According to the results of lacrimal scintigraphy, the mean value of T1/2 was 4.16 ± 1.22 minutes and the mean value of RI was $14.15\% \pm 2.30\%$ in normal subjects. However, in patients with dry eye syndrome, these values were 20.59 ± 1.97 minutes and $55.64\% \pm 6.90\%$, respectively. Consistent with the results of ophthalmologic tests, the mean Schirmer-1 value was 12.46 ± 2.10 mm, the mean value of BUT was 14.36 ± 3.40 seconds, and the mean staining value of the rose bengal was 1.98 ± 0.80 in normal subjects, whereas these values were 1.36 ± 0.49 mm, 5.46 ± 1.33 seconds, 6.62 ± 0.86 , respectively, in patients with dry eye syndrome. When we compared the results of lacrimal scintigraphy and the results of ophthalmologic tests, an inverse correlation was noted between both the T1/2 and RI values and both the Schirmer-1 and BUT values in all subjects ($p < 0.001$). However, there was a greater positive correlation between the rose bengal ocular surface staining value and both the T1/2 and RI values in all cases ($p < 0.001$). **Conclusion:** In the current study, it was concluded that although the lacrimal drainage system was normal, tear clearance was significantly delayed in dry eye patients. With this study, we have shown that quantitative lacrimal scintigraphy, which is an objective, practical, and noninvasive method, appears to be useful for the assessment of the tear clearance in patients with dry eye syndrome.

Key words: lacrimal scintigraphy, Tc-99m pertechnetate, tear clearance, dry eye syndrome.