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Spring 5-1-2021

"LONG- TERM INFLUENCE OF RADIOIODINE ABLATION THERAPY ON STRUCTURE AND FUNCTION OF TEAR GLANDS – A SYSTEMATIC REVIEW AND META- ANALYSIS"

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LONG- TERM INFLUENCE OF RADIOIODINE ABLATION THERAPY ON STRUCTURE AND FUNCTION OF TEAR GLANDS – A SYSTEMATIC REVIEW AND META-ANALYSIS

ABSTRACT

Background :

Radioactive iodine therapy has been a well-known treatment for thyroid cancer for more than 50 years and these are preferred in the treatment of hyperthyroidism because of their effectiveness, low cost and non-invasiveness. Damage to lacrimal glands and risk of developing dry eye after the administration of a high dosage of radioiodine has been stated in few studies but the evidence is controversial. This systematic review and meta-analysis aim to evaluate the effect of radioiodine iodine treatment on dry eye and nasolacrimal duct structure.

Methods :

A comprehensive search comprising studies from PubMed/ MEDLINE, Scopus, Ovid, Cochrane databases up to April 2021 were searched by two researchers independently. Literature with any age criteria, articles published in English, human studies and study design restricted to case-control and cohort that described the long-term effect of radioiodine therapy and nasolacrimal duct changes were included in the review. Studies that reported on any possible eye disorders, lacrimal gland damage, contact lens use, and studies with incomplete findings and conclusions were excluded. The data including mean age, study design, dosage, duration of RAI, methods to assess the tear glands (Schirmer's test, TBUT, OSDI score, fluorescein staining, etc.), and adverse effect were extracted from the included study. The quality of the evidence was assessed by Newcastle–Ottawa quality assessment scale (NOS). The meta-analysis was carried out using RevMan5.3 version software provided by the International Cochrane Group. Heterogeneity between the studies was examined using I^2 and Cochrane Q statistics. A random-effect model was used to determine the overall odds ratios (OR) and the standardized mean difference(MD) for primary outcome and results were analyzed with the forest plot with 95% CI. P-value of <0.05 is considered statistically significant.

Result :

After reviewing 1033 articles, four studies case-control studies, recruiting 597 eyes with different dosages of RAI uptake were included. Pooled result showed long-term effect of radioactive iodine in the exposure group with Schirmer's score (Pooled MD: -6.33 mm, 95% CI: -8.38 to -4.28 P < 0.00001) and TBUT score (pooled MD : -6.78 sec , 95% CI : -8.28 , -5.28, P < 0.002) when compared to control. Although, the mean difference of the TBUT score showed a higher effect than Schirmer's score.

Conclusion :

The current evidence indicates a significant effect on tear glands and nasolacrimal duct due to RAI therapy in the exposure group. Therefore, it is important to study the effect of RAI therapy post 1 year to know the severity of impairment of the lacrimal gland.

Keywords:

Thyroid cancer, Radioactive iodine / I 131, Radio nucleoid therapy, OSDI score, Tear film quality, Tear-film quantity, Ocular side effects, Lacrimal gland dysfunction, Dry eyes, Tear-film, Hyperthyroidism, differentiated thyroid cancer, Radio iodine, Epiphora, Nasolacrimal duct obstruction.