

The Effect of TROP2 Expression on Papillary Thyroid Carcinoma Development in Iraqi Patients

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Abstract

Background : Papillary Thyroid Carcinoma (PTC) is common type of the thyroid cancers, it's onset in female at 30-50 years more than male and account for about 80% of all thyroid cancer cases . PTC diagnosis depend on histo-pathological finds of abnormal papillary architectures in the tissue as golden standard of PTC diagnosis . Trophoblast cell surface antigen 2 (TROP2) is trans-membrane glycoprotein receptor ,encoded by Tacstd2 gene , observe in various cancer types specially epithelial cancers . TROP2 has the up-regulation (overexpression) in cancer cells such as pancreatic , thyroid and ovarian cancers. **Objective of the Study:**It's shown up-regulation of TROP 2 in PTC Iraqi patients by Immunohistochemical method.

Materials and Methods: The current study done in Al-Yarmook Teaching Hospital from March 2020 to January 2021 , was included 30 cases of PTC patients and 30 healthy subjects , all of subject's age were more than 30 years . This study depend on collect of paraffin embedded PTC biopsies then used Immunohistochemical method to examined the present of TROP2 in all cases.

Results: This qualitative study shows significant expression of TROP2 in PTC patients compare with control groups .

Conclusion: The current study demonstrate effect of TROP2 expression on PTC development

Keywords:*Papillary Thyroid Carcinoma(PTC), TROP2 and Immunohistochemical.*

Introduction

Papillary Thyroid Carcinoma (PTC) is the common thyroid cancer disturbance about 80% of all thyroid cancers, and it's more frequent in females than males at age more than 30 years ⁽¹⁾ . The histological analysis consider golden standard for diagnosis

,PTC's diagnosis by histology depend on present of papillary architecture association with nuclear features that involve elongation and irregular contour with grooves ⁽²⁾ .

Trophoblast cell surface antigen 2 (TROP2) is trans-membrane glycoprotein receptor ,encoded by tumor associated Ca signal transducer 2 (Tacstd2) gene located on chromosome 1p32 .It's found in cell lines of human trophoblasts and choriocarcinoma ,also the TROP2 expression observed to be correlated with the development and progression of tumors in several epithelial malignancies ⁽³⁾ . TROP2 has the up-regulation (overexpression) in cancer cells such

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as pancreatic , thyroid and ovarian cancers ⁽⁴⁾.

The study aim is shown up-regulation of TROP 2 in PTC Iraqi patients by Immunohistochemical method.

Materials and Methods

The current study done in Al-Yarmook Teaching Hospital from March 2020 to January 2021 was included 30 cases with PTC patients (pre-thyroidectomy) and 30 cases of health persons (control) ,the subjects studied ages were more than 30 years of both sexes. The all of individuals in this study were examined by ultrasound and computerized tomography scan to excluded any other tumor conditions .The sampling depend on collect of paraffin

embedded PTC biopsies from PTC group and control group ,then used Immunohistochemical method to examined the present of TROP2(as qualitative measurement) in all cases .

After examined TROP2, used chi-square method for statistic analysis to show different of TROP2 presenting by comparison between PTC and control groups ,and p-value (p-value > 0.05 mean significant value .

Results

The present study explain a different of TROP2 expression results between PTC and control groups . This result used Chi-square assay to find different between groups . See table 1.

Table 1: Comparison of PTC Patients and healthy persons groups according to TROP2 expression results via Chi-square assay method

Parameters	PTC group (30 cases)	Control group (30 cases)	P-value
TROP2 expression	28 Positive	0 Positive	0.02*
	2 Negative	30 Negative	

*Significant value

Discussion

In this study the immunohistochemical method was used to assess the TROP2 expression in PTC patients compares with healthy persons . The study results demonstrate that a significant value in TROP2 expression in PTC patients between PTC and control groups , that agree with SAFFAR ,et al 2021 ⁽⁵⁾ . The present study found that increase TROP2 expression in PTC group.

TROP2's expression detected in high sensitivity and specificity PTC based on these finding , TROP2 immunohistochemistry staining has been shown to be a strong diagnostic marker for PTC ,but there are various studies show finding demonstrate the

utility of TROP2 expression in the PTC diagnosis in clinical settings ,no mechanism was explored as to why TROP2expression was particularly elevated in PTC and not in other thyroid cancers ⁽⁶⁾ . The TROP2 expression also facilities tumor genesis by activating the MAPK / ERK pathway , which has significant implications for different cellular pathways lead to cancer cell proliferation ,migration ,invasion and survival ⁽⁷⁾.

This study results agree with Trerotola et al and others studies that shown that TROP2 is up-regulated in all PTC cells and support cell proliferation , and also regulate the TROP2 transcription ⁽⁸⁾.

Conclusion

The current study demonstrate effect of TROP2 expression on PTC cancer cell proliferation ,migration ,invasion and survival immunohistochemical method.

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