

DIAGNOSTIC AND PROGNOSTIC ASPECTS OF IMMUNOMORPHOLOGY OF POST-CHERNOBYL ENCAPSULATED FOLLICULAR THYROID TUMOURS

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BACKGROUND

An increased incidence of thyroid cancer among young population of contaminated territories of Russia after Chernobyl accident made very important morphological verification of diagnosis. Many epidemiological and molecular studies conducted by various research teams required an independent review of tumour histology. The International Pathology Panel formed consensus diagnosis for each case of post-Chernobyl thyroid tumours and proposed an appropriate algorithm of morphological diagnosis [1].

OBJECTIVES

The main diagnostic problem arose for estimation of malignancy in some of encapsulated follicular thyroid tumours. Doubtful features of tumour capsular invasion and focal morphological nuclear changes in tumour cells could be a reason to distinguish among benign thyroid tumours (BT) a group of borderline tumours (BLT) of uncertain malignant potential. This classification group is not widely accepted, as the malignancy of encapsulated follicular thyroid tumours should be more precisely determined. The aim of the study is to analyse diagnostic and prognostic significance of immunoexpression of markers of malignancy in encapsulated thyroid tumours.

MATERIAL AND METHODS

Immunoexpression of markers of malignancy: Galectin-3 (9C4, NCL), Cytokeratin-19 (RCK 108, Dako), HBME-1 (HBME-1, Dako), Fibronectin (polyclonal Dako), and Cyclin D1 (AM29, Zymed Lab) in 51 benign (BT, 26.7%), 87 malignant (MT, 45.6%), and 53 borderline tumours (BLT, 27.7%) is studied with consideration of delayed treatment results.

RESULTS

None of the markers of malignancy exhibited 100% sensitivity, specificity, accuracy, prognostic significance in the diagnosis of thyroid cancer:

Parameter	Immunoexpression, %				
	Galectin-3	HBME-1	Fibronectin	Cytokeratin-19	Cyclin D1
Sensitivity	83.9	77.0	66.7	89.7	64.4
Specificity	90.2	96.1	94.1	72.5	66.7
Accuracy	86.2	84.4	76.8	83.3	65.2
PRPS	93.6	97.1	95.1	84.8	76.7
NRPS	76.7	71.0	62.3	80.4	52.3

Note: PRPS and NRPS are prognostic significance of positive and negative results

The specificity increased and sensitivity decreased with increase in the number of markers expressed simultaneously. Expression of markers was evaluated in BT and BLT groups:

Type of expression (coexpression)	Specificity, %	Number of tumours	
		Abs.	%
BT			
3-4 markers	98.0	2	3.9
1-3 markers	66.7-96.1	39	76.5
No expression	-	10	19.6
BLT			
2-5 markers	98.0-100	22	41.5
1-2 markers	66.7-90.2	19	35.8
No expression	-	12	22.7

Analysis of medical files of the group of 53 patients with BLT showed that 44 (83%) were followed up for 1-10 years after surgical intervention – thyroid lobectomy (40), subtotal (3) and total thyroidectomy (1). The vast majority of patients (37, 84%) were repeatedly examined after 1-5 years, while the rest 7 (16%) were observed during 6-10 years after the surgery. No relapses or tumour progression were detected. The results indicate that immunoexpression of malignancy markers with 98% specificity and higher can be found in 3.9% BT and in 41.5% BLT, diagnosed by analysis of routine H&E stained histological sections. These results are interesting in at least two aspects. First, high specificity of expression of malignancy markers may indicate the malignant potential of some of the tumours classified by routine diagnostic methods as BT and BLT. Second, some of obviously BT and a little less than half of BLT are carcinomas with a low malignant potential,

running an uneventful course without relapses and tumour progression. We agree with K.Kakudo et al. [2] proposal related with classification, diagnostic issues and treatment of patients with BLT.

CONCLUSIONS

The results indicate that 3.9% benign and 41.5% borderline tumours express malignancy markers (specificity 98-100%). Follow up over 1-10 years after surgical treatment for borderline tumours showed no progression of tumour growth. We conclude that some benign and borderline tumors represent low-grade neoplasms with favorable prognosis.

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