

Correlation of VEGF, VEGFR-1 levels in serum and thyroid nodules with histopathological and radiological variables



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Aim

To evaluate serum and intranodular VEGF(vascular endothelial growth factor) and VEGFR-1 (vascular endothelial growth factor receptor-1) level thyroid nodules and explore its relevance to ultrasound feature/pathological results.

Materials/Methods

A total of 80 patients (62 women, 18 men) were included in this study. Thyroid fine needle aspiration biopsies were performed and levels of serum and intranodular VEGF and VEGFR-1 were measured. Any possible correlations between serum and intranodular VEGF, VEGFR-1 and biochemical/radiological variables were investigated

Results

Serum VEGFR-1(s VEGFR-1) in men was higher than in women (p=0.045). nVEGFR-1 was significantly higher in normal BMI patients compared to obese patients; (p=0.02). There were no significant differences between sVEGF, nVEGF, sVEGFR-1, nVEGFR-1 levels and number of nodules, size of nodule, benign and malignant ultrasonographic features, malignant/suspicious cytology and benign cytology (p>0.05) (Table 1) sVEGFR-1 and nVEGFR-1 levels were higher in hyperthyroid patients than in euthyroid patients (p<0.05 and p=0.003). In addition, the nVEGFR-1 level was higher in hypothyroid patients than in euthyroid patients (p=0.016). sVEGF was found to be higher in hyperactive nodules than in others. Both sVEGFR-1 (r = 0.29; p = 0.008) and nVEGF levels (r = 0.29; p = 0.01) significantly increased with increasing age. nVEGFR-1 decreased with increasing body mass index (r = -0.32; p = 0.004). There was no relationship between nodule size and sVEGF, nVEGF, sVEGFR-1, and nVEGFR-1 (p> 0.05) (Table 2).

Table 1 Laboratory Results According to Cytological Results

FNAB	Serum VEGF	Intranodular VEGF	Serum VEGFR-1	Intranodular VEGFR-1
Benign (n=73)	56,9(11,8-169)	39,1(33,7-49,8)	0,09(0,03-0,33)	0,09(0,03-0,7)
Suspicious and malignant (n=7, 8,7%)	74,4(14,3-160)	20,2 (7-63)	0,13 (0,08-0,11)	0,13 (0,03-0,17)
P	0,512	0,851	0,051	0,290

Table 2 Correlation between laboratory parameters and age, BMI, and nodule size.

Feature	Serum VEGF	Intranodular VEGF	Serum VEGFR-1	Intranodular VEGFR-1
Age	r=-0,08; p=0,499	r=-0,16; p=0,147	r=0,29; p=0,008*	r=0,29; p=0,01*
BMI	r=-0,04; p=0,747	r=-0,09; p=0,455	r=-0,06; p=0,618	r=-,32; p=0,004*
Nodule size	r=-,03; p=0,777	r=0,05; p=0,653	r=0,1; p=0,384	r=-,004; p=0,973
Serum VEGF		r=0,47; p=0,001*	r=-0,17; p=0,131	r=-0,04; p=0,696
VEGF inside nodule				r=0,02; p=0,874
Serum VEGFR-1		r=-0,02; p=0,845		r=0,31; p=0,006*

Conclusion

Our study showed relationships of sVEGF, nVEGF, sVEGFR-1, nVEGFR-1 levels with age, gender, BMI and hyperthyroidism.