Currently, there is a growing number of well-known predictors of malignancy of the thyroid nodule, including a solid, fixed formation of tumors that are detected by on physiological examination, rapid growth and large size of the site, tracheostomy, dysphagia or lymphadenopathy, history of irradiation with low doses of radiation to the head and neck during infancy, age less than 20 years and more than 70 years, and male gender. Detection of thyroid tumors, that are characterized by benign course and favorable prognosis, can significantly reduce the number of surgical interventions. However, there are some cases, where the malignant potential of malignancy of the tumor cannot be determined. In such cases, alternative diagnostic methods are required. These may include the detection of BRAF and RAS point mutations and PAX8/PPARγ and RET/PTC translocations, but the high cost of genetic testing, research data, and the relatively low sensitivity, these methods are not always suitable for routine diagnostics. The determination of the level of serum hormones may be cheaper and yield faster results. This review is devoted to involves the assessment of the role of current concept on thyroid-stimulating hormone (TSH) role in the development and progression of differentiated thyroid carcinoma, namely papillary thyroid carcinoma. Numerous studies have demonstrated the significance of high TSH level in thyroid nodules, malignization and disease progression associated with rapid growth, aggressiveness, and metastasis development. Many authors have found TSH level, find this test to be useful for distinguishing between benign and malignant thyroid tumors and have suggested that it may can be used as an auxiliary in the diagnostics. However, there have been some authors who did not find any relationship between TSH level and thyroid cancer. Finally, there is a growing body of investigations evidence demonstrating the opposite association between TSH levels and thyroid malignancies cancer. Nevertheless, genetic studies support also are in favor of the presence of a reciprocal
association between TSH level and the development of thyroid cancer.