Risk factors for goiter and thyroid nodules

The occurrence of thyroid diseases is determined by interplay between genetic and environmental factors. The major environmental factor that determines goiter prevalence is iodine status, but other environmental factors influencing entire populations have been identified such as goitrogens in food and drinking water. Less focus has been on individual environmental factors and the interplay between factors. The goiter prevalence is higher in certain groups in the population. The variation in goiter prevalence between the genders is well known with a higher occurrence among women. The association with age is probably dependent on iodine status, because it seems that the zenith of goiter prevalence appears earlier in life the more severe iodine deficiency the population is exposed to. The association with individual risk factors has been investigated in some studies, especially the association with tobacco smoking. In iodine-deficient areas, a strong association between tobacco smoking and goiter prevalence is found, whereas the association is less pronounced in iodine-replete areas. This was predictable from experimental studies showing thiocyanate to be the mediator of the goitrogenic effect of tobacco smoke acting as a competitive inhibitor of iodine uptake. The association with alcohol intake has only been investigated in few studies, but a low occurrence of goiter among alcohol consumers has been found. The mechanism of this association is not known. Increased goiter prevalence during pregnancy has been reported, and recently a long-term goitrogenic effect of pregnancies has also been shown. As demonstrated for tobacco smoking, this association is dependent on iodine status, because the association has only been found in areas with a suboptimal iodine intake. This indicates pregnancy-induced goiter to be the result of exacerbation of existing iodine deficiency. Recently, the use of oral contraceptives has been shown to be associated with a markedly reduced prevalence of goiter, although experimental studies have previously shown proliferative effects of estrogens on thyrocytes. Some implications for prevention of thyroid disease could be suggested. Discussion of smoking habits should be included in a consultation for goiter with a motivation to quit smoking. Iodine deficiency has particularly strong goitrogenic effects during pregnancy and for the sake of the mother as well as the fetus, sufficient iodine supply should be ensured to all pregnant women. The difference in age maximum in goiter prevalence suggests that monitoring of iodine deficiency disorders should ideally include a spectrum of age groups.