Thyroid diseases in the “Land of Fires”: results of a single center screening in Acerra (Naples)

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OBJECTIVES

Environmental toxins, including those deriving from illegal and hazardous disposal of urban and chemical waste, are known to act as endocrine disruptors and to increase the risk of malignancy and cancer mortality. The present study aimed at investigating prevalence and characteristics of thyroid diseases in the area of Acerra, a town in the perimeter of the so called “Land of Fires”.

METHODS

The screening included subjects aged ≥15 yrs living in Acerra (Naples). Exclusion criteria were: 1. any mental condition making the subject unable to understand the nature, scope and possible consequences of the study, or evidence of uncooperative attitude; 2. abnormal baseline findings or other medical conditions that, in the investigator’s opinion, might jeopardize patient’s safety or decrease the chance of obtaining satisfactory data needed to achieve the objective of the study, and 3. alcohol and drug abuse. Between 2014, Oct the 1st and 2015, Dec the 31st 787 consecutive subjects (633 F, 154 M, aged 39.6±16.3 yrs) were recruited on a voluntary basis. Iodine supplementation, anthropometric parameters (height, weight, BMI, waist circumference), thyroid palpation, biochemical and hormonal testing (TSH, FT3, FT4, anti-thyroid antibodies), thyroid ultrasound and fine needle cytology (FNC, when necessary) were investigated. According to the age tertiles, subjects were classified as Group A (age <24 yrs, n=236), Group B (age 25-52 yrs, n=310) an Group C (age >52 yrs, n=241). All subjects provided a written informed consent for study participation.

RESULTS

In the whole subjects cohort, anti-thyroglobulin antibodies were significantly higher in group C as compared to group A (p=0.033), whereas no significant difference was found in TSH, FT3, FT4 and anti-thyroid peroxidase antibodies levels among the three groups (Fig. 3). Prevalence of Hashimoto’s thyroiditis and nodular goiter was 13.5% and 17.5% of the whole cohort, respectively, being not different as compared to that of the Italian general population1,2. Hashimoto’s thyroiditis was significantly prevalent in group C compared to group A (p=0.021, Fig. 2), and hyperthyroidism in group C compared to group A (p=0.003) and group B (p=0.03) (Fig. 5). Prevalence of nodular goiter was higher in group C as compared to group A (p=0.0001) and group B (p=0.001), and in subjects who did not use iodine supplementation (p=0.032) as compared to those who did (Fig. 4). In patients with abnormal thyroid function, proper medical treatment was started. Among subjects undergone FNC, none had thyroid cancer and all were classified as benign nodular disease (THY2).

CONCLUSIONS

The findings of the current study suggest that subjects living in the area of Acerra had a similar prevalence of thyroid diseases as compared to the Italian general population and did not present with an increased prevalence of thyroid cancers despite chronic exposure to environmental pollutants. Further studies are still needed to confirm and extend these data, better elucidating the burden and the role of environmental pollutants as endocrine disruptor in the “Land of Fires”.

References