



Hyperandrogenism, Insulin Resistance, Acanthosis Nigricans, PCOS Associated with Hashimoto's Thyroiditis

Shashank Kumar Srivastav*

Field Hospital, Army Medical Corps, Indian Army, India

*Corresponding author: Shashank Kumar Srivastav, Fellowship In Intensive Care Medicine (FICM), Medical Officer, Field Hospital, Army Medical Corps, Indian Army, India, Tel: +91-9948715654; E-mail: dr.shashankksrivastava@gmail.com

Received date: November 22, 2018; Accepted date: December 06, 2018; Published date: December 13, 2018

Copyright: ©2018 Srivastav SK. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Abstract

Women face various problems during the period of development in their life from child to adult. They usually present with cosmetic problems like unwanted hair growth like that of male, weight gain, dark and velvety patches on body folds and creases. Some also present with infertility and pregnancy related problems such as uteromalnutrition, resulting in intrauterine growth retardation, PCOD and X-syndrome. Any change in woman's life should be suspected, diagnosed and managed at early possible to prevent long-term sequelae by three-fold.

Keywords: Hyperandrogenism; Hashimoto's thyroiditis; Insulin-resistance; Acanthosis nigricans; PCOS

Introduction

Women face various problems during the period of development in their life from child to adult. They usually present with cosmetic problems like unwanted hair growth like that of male, weight gain, dark and velvety patches on body folds and creases. Some also present with infertility and pregnancy related problems such as uteromalnutrition, resulting in intrauterine growth retardation, PCOD and X-syndrome. Any change in woman's life should be suspected, diagnosed and managed at early possible to prevent long-term sequelae by three-fold.

Commentary

Hashimoto's thyroiditis is also called, autoimmune thyroiditis which is more common thyroid disorder in United States. It was the first disease to be recognized as an autoimmune disease [1]. It can present in various forms such as painless goitre, hypothyroidism, hyperthyroidism caused by destructive thyroid hormone release. Clinical features are mostly related to thyroid hormones that include weight gain, fatigue, puffy face, coldness, dry thin hair, irregular and heavy menstrual flow, depression and pregnancy related problems. Depression and chronic fatigue are more common, even after correction of hypothyroidism. Diagnosis is made by clinical, having increased circulating levels of antithyroperoxidase (90%) or antithyroglobulin (40%) antibodies. Some patients with autoimmune thyroiditis have no anti-thyroid antibodies detectable.

Autoimmune thyroiditis or Hashimoto's thyroiditis also present with acanthosis nigricans which is velvety, hyperpigmented, verrucous skin seen on backside of neck, axillary region and skin folds of elbows. Also noting acanthosis nigricans is associated with thyroid carcinoma, insulin resistance. Note that these skin lesions would be resolved with thyroid hormones therapy.

All the above findings have an interrelation between each other for diagnosis and prevention of other clinical conditions at the early possible way.

A study by Varim et al. showed that thyroid stimulating hormone (TSH) levels, thyroid autoimmunity and insulin resistance are interrelated [2]. Insulin resistance is reduced glucose in response to given amount of insulin. It is common in both obese and non-obese women and is associated with PCOS. Homeostasis Model Assessment-Insulin Resistance (HOMA-IR) values (p: 0.011); low-density lipoprotein cholesterol levels (p: 0.008); high-density lipoprotein cholesterol levels (p: 0.041); triglyceride levels (p: 0.008); and total cholesterol levels (p: 0.002) were significantly higher among patients with positive thyroid autoantibodies than control subjects. It was found a positive correlation among thyroid stimulating hormone, anti-thyroid peroxidase, anti-thyroglobulin, and Homeostasis Model Assessment-Insulin Resistance (HOMA-IR) levels (p<0.001).

It is found that cholesterol levels, triglyceride levels are high in patients having thyroid auto antibodies. PCOS is diagnosed by ultrasonography or other forms of pelvic imaging, with estimates of the prevalence in the general population being in the order of 20%-33% [3,4]. Researches proved that females having hyperandrogenism have excessive follicular growth and this increase in follicles lead onto PCOS.

The combination of PCOS, hyperandrogenism, insulin resistance, and acanthosis nigricans with associated Hashimoto's thyroiditis leads to menstrual disorder among young women. Females face irregular periods early in their adolescent life. Other problems include menstrual dysfunction, infrequent or absent ovulation and polycystic ovaries. Insulin resistance associated Hashimoto's thyroiditis lead to obesity, numerous skin tags like acanthosis nigricans. They also experience psychological distress with morbidity, depression and self-esteem problems. Etiologies are still unknown and makes very difficult to manage. Diagnosis can be made by clinical finding and laboratory investigations. Polymicrocystic ovaries, congenital hyperplasia of adrenal, tumour ovarian and adrenal causes, idiopathic hirsutism are all the causes of hyperandrogenism.

Researchers from Germany introduced evidence suggestive of threefold increase in prevalence of Hashimoto's thyroiditis in women with PCOS as compared with other general population [5].

Also other investigators reported similar results [6-9] this study comprise "The largest single cohort examined to date," according to the researchers.

Researchers explained that the more potent effect of autoimmune thyroiditis on testosterone vs. free androgen Index was likely due to increased BMI. Sex hormone binding globulin concentrations were decreased in those with higher BMI. Females with hyperandrogenism present clinically with acne, seborrhoea and/or hirsutism.

Hirsutism being the most common symptom is found in approximately 5% of women in procreation age [10]. The etiologies of the hyperandrogenism are dominated by polymicrocystic ovaries (71%-86%); congenital hyperplasia of adrenal (3%-10%); the tumour ovarian and adrenalin causes (0.3%); and idiopathic hirsutism (10%) [11,12]. They also have menstrual disorders. Other features include alopecia, harsh voice, hyperhidrosis, cliteromegaly and/or big hips. Above all hirsutism is most common finding.

Conclusion

These patients should be observed for their ailments in later life. Obesity in adolescents needs to be avoided and corrected. Lifestyle changes should be recommended. It is suggested that in utero-malnutrition results in intrauterine growth-retarded baby which develops PCOD and X syndrome in later life. This implies that pregnancy should be managed well to maintain a good health of the individual. Therefore, management of each consequence can prevent development of other.

References

1. Nakazawa, Donna (2008) Hashimoto's thyroiditis. The Autoimmune Epidemic. 4th (edn). New York: Simon & Schuster. pp: 32-35.
2. Varim C, Kaya1 T, Varim P, Nalbant A, Vatan MB, et al. (2017) Insulin resistance in the patients with euthyroid Hashimoto thyroiditis. Biomed Res 28: 1543-1547.
3. Polson DW, Adams J, Wadsworth J, Franks S (1988) Polycystic ovaries: a common finding in normal women. Lancet 1: 870-872.
4. Michelmore KF, Balen AH, Dunger DB, Vessey MP (1999) Polycystic ovaries and associated clinical and biochemical features in young women. Clin Endocrinol (Oxf) 51: 779-786.
5. Ulrich J, Goerges J, Keck C, Muller-Wieland D, Diederich S, et al. (2018) Impact of Autoimmune Thyroiditis on Reproductive and Metabolic Parameters in Patients with Polycystic Ovary Syndrome. Exp Clin Endocrinol Diabetes 126: 198-204.
6. Du D, Li X (2013) The relationship between thyroiditis and polycystic ovary syndrome: A meta-analysis. Int J Clin Exp Med 6: 880-889.
7. Gaberscek S, Zaletel K, Schwetz V, Pieber T, Obermayer-Pietsch B, et al. (2015) Mechanisms in endocrinology: Thyroid and polycystic ovary syndrome. Eur J Endocrinol 172: R9-21.
8. Janssen OE, Mehlmauer N, Hahn S, Offner AH, Gartner R (2004) High prevalence of autoimmune thyroiditis in patients with polycystic ovary syndrome. Eur J Endocrinol 150: 363-369.
9. Singla R, Gupta Y, Khemani M, Aggarwal S (2015) Thyroid disorders and polycystic ovary syndrome: An emerging relationship. Ind J Endocrinol Metab 19: 25-29.
10. Rosenfield RL (2005) Clinical practice. Hirsutism. N Engl J Med 353: 2578-2588.
11. Escobar-Morreale HF, Carmina E, Dewailly D, Gambineri A, Kelestimur F, et al. (2012) Epidemiology, diagnosis and management of hirsutism: a consensus statement by the Androgen Excess and Polycystic Ovary Syndrome Society. Hum Reprod Update 18: 146-170.
12. Chabbert-Buffet N, Droumaguet C, Salenave S, Bry H, Young J (2011) Hirsutisme et hyperandrogénie: stratégie diagnostique et principes du traitement. Médecine Clinique Endocrinologie & Diabète 50: 53-60.