Abnormal Uterine Bleeding (AUB) and Thyroid Function in Chhattisgarh

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ABSTRACT

Abnormal function of thyroid gland is associated with a disturbance in the menstrual cycle. However, in clinical practice, thyroid dysfunction is frequently overlooked as a possible etiology and therefore, the importance to investigate thyroid function in asymptomatic cases is under-recognized in India. Treating thyroid dysfunction in such cases can reverse the menstrual abnormality, thus avoiding unnecessary hormonal therapy or in long term, hysterectomy. This article is intended to determine the prevalence of overt and subclinical forms of hypothyroidism/hyperthyroidism among women with abnormal uterine bleeding (AUB) in a known iodine-deficient state of India, Chhattisgarh. Moreover, the aims included to characterize the types of menstrual abnormality with thyroid dysfunction in study participants. The present study found a prevalence of thyroid dysfunction in one out of five cases of menstrual abnormality, most common dysfunction being hypothyroidism. An appreciable proportion of thyroid disorder was found in patients with menorrhagia, oligomenorrhea, polymenorrhea and amenorrhea.

KEYWORDS
Chattisgarh, Endocrinology, Hypothyroidism, Menstrual Abnormality, Thyroid disorder

INTRODUCTION

Thyroid disorders are often ubiquitous and insidious in their presentation (Redmond G.P., 2004). In a nationwide study, hypothyroidism was found to be a common form of thyroid dysfunction affecting approximately 11% of the study population. The older population (above the age of 35 years) seemed to be at higher risk of hypothyroidism than the younger population. Almost one-third of the hypothyroid patients were not aware of the condition and were diagnosed for the first time during the course of study related screening (Chandrakant, Pandav, Yadav et al., 2013).

Thyroid disorders are 10 times more common in women than men and have unique consequences related to menstrual cycle and reproduction. Thyroid dysfunction is associated with menstrual abnormalities in females of all age groups (Pahwa, Kaur & Gupta, 2013). Menarche, pubertal growth and development, menstrual cycles, fertility and fetal development, post-partum period, menopausal years are profoundly influenced by the thyroid status of the women (Bhavani, Sathineedi, Giri et al., 2015).

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The menstrual pattern is influenced by thyroid hormones directly through impact on the ovaries and indirectly through impact on sex hormone binding globulin, prolactin and gonadotropin-releasing hormone, and coagulation factors (Poppe, Velkeniers & Glinoer, 2007). Severe hypothyroidism is commonly associated with ovulatory dysfunction due to numerous interactions of thyroid hormones with the female reproductive system. Both hyperprolactinaemia, due to increased TRH production, and altered GnRH pulsatile secretion, leading to a delay in LH response and inadequate corpus luteum, have been reported (Longcope, Abend, Braverman & Emerson, 1990; Scanlon, Chan, Heath et al., 1981; Thomas & Reid, 1987). Thyroid responsivity by the ovaries could be explained by the presence of thyroid hormone receptors in human oocytes (Wakim, Polizotto, Buffo et al., 1993). Thyroid hormones also synergize with the FSH-mediated LH/hCG receptor to exert direct stimulatory effects on granulosa cell function (progesterone production) (Cecconi, Rucci, Scaldaferrri et al., 1999) and in in vitro studies effects on differentiation of the trophoblast have been shown (Maruo, Matsuo & Mochizuki, 1991). Another pathway through which hypothyroidism may impact on fertility is by altering the peripheral metabolism of estrogen and by decreasing Sex Hormone Binding Globulin (SHBG) production. Both pathways may result in an abnormal feedback at the pituitary level. Independently of hormonal changes, hypothyroidism can also lead to menorrhagia by altered production of coagulation factors (decreased levels of factors VII, VIII, IX and XI) (Ansell, 1996).

SHBG production increases in hyperthyroid women, the metabolism of estrogen is altered and the conversion of androgens to estrogens is increased. Hyperthyroxinemia increases the gonadotrophin response to GnRH and baseline gonadotropin concentrations are also frequently elevated. The decrease in menstrual flow may also relate to effects on haemostatic factors, including the synthesis of factor VIII (Goldsmith, Sturgis, Leiman et al., 1952). Despite these metabolic changes, hyperthyroid women usually maintain ovulation, according to endometrial biopsies (Krassas, Poppe & Glinoer, 2010).

Thyrotoxicosis is associated mainly with hypomenorrhea and polymenorrhea, whereas hypothyroidism is associated mainly with menorrhagia and oligomenorrhea (Krassas, Poppe & Glinoer, 2010; Mansourian, 2013). But, any type of menstrual abnormality can occur with hypo- or hyper-functioning of the thyroid gland (Redmond G.P., 2004). Menstrual irregularities are significantly more frequent in patients with thyroid dysfunction than in the general population (Tajinder, Verma, Sujata, 2011; Maruna, 2006; Kakuno, Amino, Kanoh et al., 2010). In majority of the cases, menstrual irregularity precedes the occurrence of other clinical symptoms of thyroid dysfunction (Pahwa, Kaur & Gupta, 2013; Tajinder, Verma & Sujata, 2011).

But, unfortunately, in clinical practice, thyroid disorders are overlooked as a possible etiology of abnormal uterine bleeding. The need to investigate thyroid function in the absence of clinical symptoms and signs, and in the absence of goiter, is less well recognized. Often, dysfunction of the hypothalamo-pituitary-ovarian axis is presumed to be the culprit for menstrual disorders at extremes of reproductive age group. Interplay of this axis with the hypothalamo-pituitary-thyroid axis is often ignored. Simply treating the thyroid dysfunction in such cases can reverse the menstrual abnormality and avoid unnecessary hormonal therapy and/or hysterectomy. Undiagnosed thyroid disorders are one of the major etiopathogenesis of menstrual disturbances leading to primary or secondary infertility. American Thyroid Association says that untreated hypothyroidism during pregnancy causes increased risk of complications during pregnancy itself and also to the neonates like neurocognitive deficits, fetal deaths, abortions, premature deliveries and low birth weight babies.

The present study is carried out on the population of Chhattisgarh State (CG). CG is an iodine deficient state having one of the lowest proportion of household iodized salt coverage (Chandrakant, Pandav, Yadav et al, 2013), therefore expected to have high prevalence of thyroid dysfunction. However, to the best of our knowledge, there has been no such study on correlation of menstrual irregularity with thyroid disorders that has been done so far in this region.

This study intends to determine the thyroid status in women with abnormal uterine bleeding in the absence of structural pathologies of the genital tract. Also, it aims to characterize the type of
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