Journal of Biology, Agriculture and Healthcare
ISSN 2224-3208 (Paper) ISSN 2225-093X (Online)
Vol.3, No.16, 2013

Reproductive Hormones and Fibroid Cases in Nigerian Women

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Abstract
Investigations were carried out on the association between some reproductive hormones (Progesterone, oestrogen, leutenizing and follicle stimulating hormones), and fibroid cases in Nigerian women. The levels of these hormones were determined in 30 patients with chronic fibroid cases and another 30 patients with non chronic fibroid cases. The mean values of these hormones in non-chronic fibroid cases (14.50±0.20, 98.01±0.67, 0.51±0.05, 4.02±0.74 respectively), were found to be significantly higher than corresponding values in non fibroid cases. Also the values obtained in chronic fibroid cases were also significantly higher ($P<0.05$) than that of the non chronic fibroid cases. Our finding indicates that the alteration in these reproductive hormone levels might be related with the pathogenesis of fibroid in Nigerian women.
Keywords: reproductive hormones, progesterone, oestrogen, leuteinizing hormones, follicle stimulating hormones, fibroid, pathogenesis.

INTRODUCTION

A uterine fibroid is a leionyoma (benign, non cancerous tumor form of smooth muscle tissue, that originates from the smooth muscle layer (myometrium) of the uterous. Fibroids are often multiple. The malignant version of a fibroid is extremely uncommon and termed leiomyosercoma (Neigeret et al,2006)

Fibroids are the most common benign tumors in females and typically found during the middle and later reproductive years. While most fibroids are asymptomatic, they can grow and cause heavy and painful menstruation, painful sexual intercourse, and urinary frequency although these appear to be very rare (Neigeret et al, 2006). Symptoms caused by uterine fibroid are a very frequent indication for hysterectomy (Neimanetal 2011; ApplezWeig, 2006)

Uterine fibroids are large masses made up of tissue cells from uterus, actually a type of non cancerous tumor, fibroids can grow in and around uterus distorting the shape and size of this organ. Fibroids typically range in size, from few centimeters to up to 15 centimeters or more. Fibroid tumors often grow in clusters, so if a person has one uterine fibroid it is likely the person develop another (Akinyemi et al, 2004; Fisher et al 2010)

Uterine fibroid can affect women at any age, however women between ages 20 and 50 are likely to develop larger fibroids.

Reproductive hormones generally are connected with fibroid growth. Hormones are chemical substance secreted by one tissue and travels by way of body fluids to affect another tissue in the body. In essence they are chemical messengers (Shozu et al , 2004, Whitehead and Nuzzey 2001). Fibroid growth is strongly dependent on reproductive hormones such as oestrogen, progesterone, follicle stimulating hormones, luteinizing hormones etc

The growth of fibroid has been associated with oestrogen during reproductive years (Cesen – cunmmings et al 2003). Elevated follicle stimulating hormones receptor levels have been detected in the endothelia of tumor vasculature in a very wide range of solid tumor (Rokola 2008). Oestrogen and progesterone which are major hormones which aid the growth of fibroids, are both secreted by the reproductive activity of luteinizing hormones together with that of follicle stimulating hormones, therefore relevant only during reproductive years. (Evans and Brunsell, 2007)

The increased occurrence of uterine fibroid among women especially in Nigeria has prompted the current research work.

MATERIALS AND METHOD

Grouping

The present study was carried out at Ekiti State University teaching Hospital (EKSUTH) Ado Ekiti, Ekiti State Nigeria. The study included patients without the history of fibroid, (Non fibroid). Patients who have just been discovered by accident with fibroid (Non chronic fibroid), and patient with chronic fibroid cases who are advised to go through operation (chronic fibroid). All the patients were attending antenatal clinics in out patients department (OPD) of EKSUTH. All the patients were ranging 20-50 years. The subjects were divided into three groups.

Group 1 included twenty subjects of patients with no record of uterine fibroid that serve as controls. Group 2 is made up of twenty patients with non chronic fibroid cases while group 3 is made up of another twenty patients with chronic fibroid cases.

Blood sampling

Blood samples were drawn from all the subjects following a fast of 6-12 hours. Plasma was separated by centrifuging the blood at 3000rpm for 10minutes at 4^0c. The plasma was used for the estimation of progesterone, oestrogen, follicle stimulating hormone and lentenizing hormone.

Biochemical assay

All the reproductive hormones assayed for were estimated by the method of enzyme linked immnosorbent assay (ELISA) .

Statistical Analysis

Data got from the presents study were presented as mean value ± SD. The statistical significance was evaluated by students "T" test

RESULT AND DISCUSSION

TABLE 1: Clinical characteristics of the study groups

Characteristics	NFP	NFCP	CFP	P-Value
Number of women	20	20	20	NS
Age (Years)	28.0±4.20	37.7±5.51	41.0±3.20	P<0.05
Weight (Kg)	52.5±2.02	69.0 ± 4.10	74.5±2.10	P<0.05
Height (ft)	5.2±4.02	5.1±3.80	5.3±4.00	NS

TABLE 2: Reproductive Hormones in non fibroid patients, non-chronic fibroid patients and chronic fibroid patients.

Parameters	NFP	NCFP	CFP
Oestrogen (mmol/ml)	88.1±2.02	96.3±1.40	98.0±1.67
Follicle Stimulating Hormone (ng/ml)	3.19±2.40	3.51±7.04	4.02±7.04
Progesterone (mmol/L)	12.40±0.21	13.95±0.20	15.51±0.20
Leuteinizing Hormone (mmol/L)	0.30±0.10	0.51±0.03	0.55±0.05

*P-Value <0.05
NFP – Non Fibroid Patient
NCFP- Non Chronic Fibroid Patient
CFP- Chronic Fibroid Patient

Characteristics of the non fibroid women, non chronic fibroid women and chronic fibroid women are summarized in table 1. There were insignificant differences between the groups as regarding number of women and height. However significantly higher values were found for age and weight.

Considering the level of progesterone, it was found be significantly highest in chronic fibroid women while the level in non fibroid women while the level in non fibroid women is significantly lower than that of non chronic fibroid hormones. Biochemically, fibroids have higher progesterone receptor concentrations than normal myometrium, this suggest that progesterone enhances fibroid growth (Gold -zieher et al 2006, Ross et al 2006, Marshall et al 2007).

For oestrogen, women with chronic fibroid and non chronic fibroid showed significant increase level compared to non fibroid women. Oestrogen promotes the growth of fibroid (Neigere al 2006, Cesen-cummings et al 2003). One of the reasons why there can be increase in the levels of oestrogen as the fibroid grows can be as a result of increase in weight of the women. Oestrogen can be synthesized by fat cells (Nelson and Buchin 2001, Anate, 2007)

Women with chronic fibroid showed significantly higher value in follicle stimulating hormones compared to non chronic fibroid and non fibroid women . The increase in the level of FSH may be as a result of the increase in some level of progesterone and oestrogen which no higher suppress the release of follicle stimulating hormones (Dickerson et al 2008). Also in females generally, at the end of the initial phase there is a slight rise in follicle stimulating that seems to be of importance to start the next ovulatory cycle (Fowler et al 2003).

It was also found that there was a significant increase in the level of luteinizing hormone in chronic fibroid women and non chronic fibroid women. One of the reasons why luteinizing hormone may have such significant increase is that, the release of luteinizing hormone at the pituitary gland is controlled by pulses of gonadotropin-releasing hormones (GnRH) from the hypothalamus. Those pulses in turn are subject to extugen feedback by the gonads, so a spike in oestrogen production stimulates the release of luteinizing hormone

(Boynton et al 2005; Wallach and Vlahos 2004).

The significant increase in the level of all the reproductive hormones examined in this study as fibroid progresses from non chronic to chronic state may be an indication that reproductive hormones changes is a contributory factor to fibroid in women.

Conclusion

From our results, it is evident that all the levels of the reproductive hormones considered are significantly higher in fibroid cases. Thus we conclude that fibroid in women is associated with changes in reproductive hormones levels in Nigerian women.

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