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Male Infertility Associated With Hyperprolactinaemia: Our Experience Using Bromocriptine in University of Maiduguri Teaching Hospital North Eastern Nigeria

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Abstract: ***Background: Hyperprolactinaemia is one of the established causes of infertility in both sexes, though rare in the male when taken in isolation. The cause in the majority though idiopathic, is amenable to drug treatment. Other causes include prolactinoma, antipsychotic drugs, and chronic liver disease. Hyperprolactinaemia suppresses spermatogenesis through various mechanisms, lowering the level of prolactin therefore improves semen parameters and fertility. Materials and Methods: The study reviewed isolated hyperprolactinaemia associated male infertility in University of Maiduguri Teaching Hospital (UMTH) and State specialist Hospital Maiduguri from January 2007 to December 2011. Results: A total of 17 patients were studied age ranged from 27 – 52 years, with 11 idiopathic, 2 chronic liver diseases, 2 antipsychotic drugs medication and 1 each antithyroid drugs and multiples drugs abuse as the causes of hyperprolactinaemia. All patients received bromocriptine treatment with remarkable results. Conclusion: Hyperprolactinaemia associated male infertility exists in our environment and is amenable to bromocriptine treatment with good results.***

Keywords: Male infertility, Hyperprolactinaemia, Bromocriptine treatment, Outcome

1. Introduction

Hyperprolactinaemia in males can occur as a result of adenoma of the pituitary gland (prolactinoma), drugs induced or idiopathic [1-3]. Hyperprolactinaemia causes infertility in about 11% in oligospermic males[4]. Hyperprolactinaemia inhibits the pulsatile secretion of gonadotrophin releasing hormone, which causes decreased pulsatile release of follicle stimulating hormone, luteinizing hormone, and testosterone, which in turn causes spermatogenic arrest, impaired sperm motility, and altered sperm quality. It later produces secondary hypogonadism and infertility[4]. Hyperprolactinaemia also directly influences spermatogenesis and steroidogenesis by acting on prolactin receptors present in sertoli cells, and leydig cells in the testes and produces primary hypogonadism and infertility[4]. It is seen that oligospermic or azospermic patients with normal levels of serum gonadotrophin show relatively higher serum prolactin level, proving a role of prolactin in gametogenesis which is independent of gonadotrophins[5]. There are many studies suggesting that hyperprolactinaemia has a definite role in male infertility, and is one of the reversible causes of infertility[6]. It can be managed medically with simple medication such as bromocriptine and cabergoline, which normalizes serum prolactin levels, restoring gonadal function, reversing infertility[7]. In infertility clinic, if male patients present with decrease libido, erectile dysfunction, and hypogonadism, and semen microscopic analysis shows oligospermia or azospermia, impaired sperm motility, or altered sperm quality, a routine evaluation of serum prolactin level should be done to avoid unnecessary, costly, and invasive investigation like testicular biopsy[8]. The study aimed at reviewing hyperprolactinaemia associated male infertility and outcome of treatment with bromocriptine.

2. Materials and Methods

The study reviewed all male patients with isolated hyperprolactinaemia associated male infertility that were managed at the UMTH between January 2007 to December 2011. Data were obtained from clinical and laboratory records. The diagnosis of infertility was made from clinical (failure to achieved conception after one year of regular unprotected coitus) and laboratory evaluation (prolactin level above literature value of 1.8 – 17ng/ml). All patients that had other causes of infertility and or incomplete data were excluded from the study. All patients received 2.5mg daily for a week as a primer and then twice a day for four weeks. Subsequently same dose was kept as maintenance for 3 – 6 months. When the decrease in the prolactin levels was not appreciable the dose was doubled or tripled. Seminal fluid analysis was done every 3 months, minimal follow up period 18 months. Patients also received adjuvant multivitamins and anti oxidants (Homtamin). The responses to treatment were, **Complete** when conception was achieved, **Partial** when semen parameters improved but no conception, and **No response** when the sperm parameters worsened or remain the same. **Total positive response** was the sum of positive and partial responses.

3. Results

A total of 21 patients were managed, 4 were excluded due to incomplete data and 17 were studied. Age ranged from 17 – 52years with a mean of 40.33 yrs. The peak age group was 31 – 40years with 8(47.06%) of patients **table 1**. Decrease libido was seen in 9(52.94%), erectile dysfunction in 5(29.41%), gynaecomastia in 2(11.76%). Premorbid medical conditions were hypertension in 5(29.41%), diabetes in 3(17.65%), obesity, depression, and chronic liver disease in

2(11.76%) each, while 1(5.88%) had thyrotoxicosis, and 1(5.88%) was a multiple drug addict. Among the causes were idiopathic in 11(64.71%), and chronic liver disease in 2(11.76%) **table 2.** The seminal fluid analysis showed normal count in 1(5.88%), oligospermia in 9(52.94%), while 7(41.18%) were azospermic. The serum prolactin levels ranged from 19 – 37ng/ml with a mean of 25.65g/ml **table 3**. The responses to treatment were complete in 7(41.18%), partial in 6(35.29%), and no response in 4(23.52%). Therefore total positive response to bromocriptine treatment was 13(76.47%). Non respondents to treatment were referred for Assisted Reproductive Techniques.

4. Discussion

Infertility is the middle aged problem as people want to bear children in their prime age, and this study found the peak age group was 31 – 40years. The hyperprolactinaemia range in this study was lower than the 46 – 260ng/ml found by Laufer et al[9]. However the etiological factors were similar with idiopathic causes in 70% compared to 64.71% in this study, liver disease in 20%, compared to 11.76% in this study. Micro adenomas (prolactinoma) accounted for 10%, in complete variance with this study that did not find adenomas, but drugs accounting for 23.52%. The study found antithyroid (carbimazole, thiouracil) and anti psychotic (chlorpromazine and amitryptylline) drugs similar to findings by Siddiq et al[10]. These drugs were prescription medications for the patients with clinical depression and toxic goiter. One patient with drug – induced hyperprolactinaemia was a multiple drug addict. The phenomenon of drug addiction is global among the youth. Hyperprolactinaemia is associated with low libido, erectile dysfunction and hypogonadism with semen microscopy showing oligospermia or azospermia, impaired sperm motility or altered sperm quality[11]. This study found similar results with 52.94% oligospermic while 41.18% azospermic. Laufer et al found marked increase in sperm motility in 30% of their patients who achieved conception following 5 – 8weeks of treatment, and recommended 2.5 – 7.5mg daily bromocriptine for 8 – 16weeks which lowered prolactin to normal in all their patients. Modebe[12] in his study found 7 patients with oligospermia secondary to hyperprolactinaemia of whom 57.14% of them sperm count returned to normal and 28.57% conceived after 9 – 12 weeks of treatment with bromocriptine. In this study 41.18% of patients achieved conception while 35.29% showed improved sperm parameters with 2.5 – 7.5mg daily or twice daily for 3 – 6months. In this study non respondents were referred for ART in keeping with global standard best practice[13].

5. Conclusion

Male infertility is an emerging clinical problem in the developing world, and hyperprolactinaemia is increasingly being seen as a major component of hormonal imbalance associated with male infertility. Thorough evaluation is essential in identifying the causes of hyperprolactinaemia that are amenable to bromocriptine treatment (76.40%) as found in this study.

Table 1: Age distribution

Age (years)	No	(%)
21 – 30	1	5.88
31 – 40	8	47.06
41 – 50	6	35.29
51 - 60	2	11.7
Total	17	100

Table 2: Causes of Hyperprolactinaemia

Causes	No (%)
Idiopathic	11 64.71
Antipsychotics drugs	2 11.76
Chronic liver diseases	2 11.76
* Antithyroid drugs	1 5.88
Multiple drug abuse	1 5.88
Total	17 100

*NB Antithyroid drugs induced hypothyroidism post thyroidectomy

Table 3: Serum prolactin level of patients

Patients S/N	Prolactin level (ng/ml)
1	28.0
2	24.0
3	25.0
4	32.0
5	20.0
6	25.0
7	27.0
8	23.0
9	31.0
10	29.0
11	19.0
12	28.9
13	24.0
14	37.0
15	19.3
16	17.4
17	21.4

Legends of Tables

Table1 Age distribution of patients

Table 2 Causes of hyperprolactinaemia

Table 3 Patients prolactin level

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