



ORIGINAL RESEARCH PAPER

Psychiatry

PREVALENCE AND CLINICAL INDICATORS OF OSTEOPOROSIS IN PATIENTS RECEIVING LONG-TERM RISPERIDONE

KEY WORDS: – Risperidone, BMD – Bone Mineral Density, Osteoporosis, Hyperprolactinemia, ED - Erectile Dysfunction.

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ABSTRACT

Risperidone and Amisulpride create a significant and long-lasting rise in blood prolactin levels. Risperidone, a frequently used atypical antipsychotic, has been shown in several studies to have a greater proclivity to produce hyperprolactinemia when compared to conventional and other atypical antipsychotic drugs. Risperidone is an atypical antipsychotic that is readily available, reasonably priced, and frequently used in India. Antipsychotic medications can cause hyperprolactinemia, which can affect bone mineral density. This is a prospective study done in Narayana Medical College & Hospital, Nellore in the Department of Psychiatry. 60 patients who were diagnosed with various psychiatric illnesses and treated with Risperidone & were analysed for hyperprolactinemia and its effects on BMD and associated osteoporosis. Our study revealed that there is significant lowering of BMD, associated osteoporosis, low Vitamin D, erectile dysfunction and amenorrhea in majority of our subjects. Risperidone induced hyperprolactinemia is the important factor for these changes.

- **Source of the study:** Narayana Medical College & Hospital, Nellore.
- **Study design:** Prospective study.
- **Duration of study:** January 2022 to December 2022.
- **Sample size:** 60 patients of either sex.

Inclusion Criteria

- Age between 18 and 45 years.
- Patient on Risperidone as the only antipsychotic drug for at least for 12 months.
- Patients giving written informed consent.

Exclusion Criteria

- Patients who are NOT willing to give a written informed consent.
- Patients with Alcohol dependence syndrome or Anorexia Nervosa.
- Patients on combination of antipsychotic medications.
- Patients on other drugs which can cause hyperprolactinaemia, (Sodium Valproate, Carbamazepine, Tricyclic antidepressants, Specific Serotonin Reuptake Inhibitors, and oral contraceptive pills)
- Non-ambulant patients.
- Pregnant or lactating women.

INTRODUCTION

Risperidone and Amisulpride create a significant and long-lasting rise in blood prolactin levels. Risperidone, a frequently used atypical antipsychotic, has been shown in several studies to have a greater proclivity to produce hyperprolactinemia when compared to conventional and other atypical antipsychotic drugs. Risperidone is an atypical antipsychotic that is readily available, reasonably priced, and frequently used in India. Antipsychotic medications can cause hyperprolactinemia, which can affect bone mineral density. The studies that found lower BMD in antipsychotic-treated patients are preliminary, with small sample numbers and other methodological flaws (Haddad et al., 2003). These are, nevertheless, concerning and should be investigated in patients using psychiatric medication. In this respect, the present study will determine the prevalence of low bone mineral density and sexual dysfunction in a homogeneous sample of Risperidone-treated patients, as well as the relationship between them. Because the relationship between antipsychotic use and its effect on BMD is complex, accurate interpretation of the relationship between Risperidone and BMD necessitates measurement of 25 hydroxy vitamin-D levels, serum calcium, serum albumin, creatinine, serum prolactin, and alkaline phosphatase levels.

Sex Ratio

SEX	NUMBER	%
MALE	28	46.6
FEMALE	32	53.4

VARIANT	MALE	FEMALE
HYPERPROLACTINEMIA	20	25
NORMAL PROLACTIN	8	7
NORMAL VITAMIN D	4	0
VITAMIN D DEFICIENT	24	32
LOW BMD/OSTEOPENIA/OSTEOPOROSIS	21	27

DURATION OF TREATMENT WITH RISPERIDONE

	MALE	FEMALE
> 1 YEAR	17	19
<1 YEAR	11	13
SEXUAL DYSFUNCTION	YES	NO
ERECTILE DYSFUNCTION (MEN)	22	6
AMENORRHEA (WOMEN)	23	9

DISCUSSION

Hyperprolactemia And Bmd Changes:

Our data showed that 80% of patients on Risperidone have

RESULTS

low bone mineral density (osteopenia or osteoporosis). Hyperprolactinemia was seen in 75% of our participants who had reduced BMD at the neck of the femur, the lumbar spine, or both. Our findings also revealed an adverse connection between prolactin levels and BMC (bone mineral content) at the femoral neck. Abraham et al. (2003) discovered an inverse relationship between prolactin levels and bone mass in antipsychotic drug users. Individuals with hyperprolactinemia should be evaluated further in order to track changes in BMD.

Antipsychotic Induced Hyperprolactinemia

Hyperprolactinemia was seen in 78% of women and 71% of males in our research. A recent research found that almost 60% of women and 40% of men treated with a prolactin-raising antipsychotic had prolactin levels beyond the upper limit of the normal range. Our finding of hyperprolactinemia in female is comparable to the findings of the previous research. Yet, the frequency of hyperprolactinemia in men is about double that reported in the literature. The significant frequency of hyperprolactinemia in the Indian male psychiatric community warrants additional investigation. Hyperprolactinemia was seen in 75% of the individuals. Hyperprolactinemia is a side effect of antipsychotic treatment that has received little attention from doctors and researchers. Risperidone is more likely to produce hyperprolactinemia than other regularly used atypicals.

Antipsychotic Induced Menstrual Irregularities And Hyperprolactinemia

72% of women subjects, with a mean age of 35, had menstrual irregularities. Amenorrhea affected 42% of the women, and delayed menstruation affected 32%. Hyperprolactinemia was seen in all women who experienced amenorrhea. Existing evidence suggests that irregular cycles and galactorrhoea are common, but that clinicians overestimate their prevalence. Well-conducted trials of women treated with conventional antipsychotics, for example, have revealed prevalence rates of oligomenorrhoea / amenorrhea of roughly 45% and galactorrhoea of approximately 19%. Hyperprolactinemic hypogonadal women with secondary amenorrhea due to inadequate oestrogen production had considerably lower BMD than hyperprolactinemic hypogonadal women who maintained sufficient oestrogen levels to continue menstruation. This shows that women using Risperidone who suffer amenorrhea are at a greater risk of having their BMD reduced and maybe fractured. The current study did not examine the duration of amenorrhea and its link to BMD alterations.

Sexual Dysfunction And Antipsychotic Medication

Erectile dysfunction was reported by 78% of men with a mean age of 28 years. Sexual dysfunction may be underreported in our study. Causes include a lack of a comprehensive questionnaire, cultural differences, and stigma-related concerns. The presence of ED was shown to be strongly linked with BMD impairment.

Vitamin D And Chronic Mental Illness

More than 93% of patients on long-term Risperidone had either vitamin deficiency or insufficiency, according to our study. 46% were vitamin D deficient (10 ng/mL). It is concerning that 40% of ambulatory psychotic outpatients in their maintenance phase of therapy showed considerable vitamin D insufficiency, with a mean age of 30. A few studies have been conducted to assess the extent of vitamin D insufficiency in individuals using long-term antipsychotic treatment. Inadequate diet and restricted exposure to sunshine have been proposed as probable reasons for vitamin D3 insufficiency in schizophrenic patients. Vitamin D treatment is suggested therapeutic practice in individuals with low bone mineral density. It is inexpensive, widely accessible, and has a straightforward dose schedule. Our observation of an association between low vitamin D levels

and decreased bone mineral density was based on an exploratory investigation and so has to be repeated with prior hypothesis testing. It offers the prospect that adding vitamin D to the therapy of antipsychotic patients might lower the risk of bone mineral density loss.

CONCLUSION

This hospital based study of patients receiving maintenance Risperidone for a minimum of one year showed an 80 % prevalence of abnormal bone mineral density. 14 had osteoporosis, and 34 had osteopenia. The mean age was only 30.2 years. 72 % of women had menstrual irregularities and all women with amenorrhea were hyperprolactinemic. 78% of the men reported erectile dysfunction. ED was more significantly associated with changes in BMD. 46% of the subjects had severe vitamin D deficiency. The direction of causality, if any, and its possible therapeutic potential to reverse or delay this process, remains to be explored.

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