Research Journal of Medical Sciences 2 (2): 51-53, 2008
ISSN: 1815-9346

Pattern of Weight Changes Amongst Non-Psychotic Depressive Subjects on Amitriptyline Treatment

[1]P.C. Stanley and [2]E.G. Asekomeh
[1]Department of Mental Health, [2]Department of Internal Medicine,
University of Port Harcourt Teaching Hospital, Port Harcourt, Nigeria

Abstract: This study investigated the pattern of changes in Weight and Body Mass Indices changes among 25 Non-psychotic Depressives on daily 50 mg of Amitryptilline, who were age and sex matched with the control group. Diagnosis was based on DSM (IV) (1994). Measurements of Weight and Body Mass Indices (BMI) after 2 and 6 weeks from the commencement of the study showed significant differences. The result suggests that amitryptilline is associated with weight gain and increased BMI in Nigerian Africans with non-psychotic depression.

Key words: Non-psychotic depression, amitriptyline, treatment, weight changes, Body Mass Index (BMI), Nigerian Africans

INTRODUCTION

Non-psychotic depression is an affective mental disorder in which a person experiences deep persistent sadness, lack of energy and diminished interest in nearly all activities. It is one of the most prevalent and lasting mental illness. It affects an individual's perception of self and environment, alters appetite for food and sex and feelings towards others (American Psychiatric Association, 1994). The symptoms of non-psychotic depression include persistent sadness and excessive somnolence or insomnia, early-morning waking, reduced appetite and weight loss or increased appetite and weight gain, restlessness, difficulty in remembering or taking decisions, guilt feeling, hopelessness and feeling of worthlessness and suicidal ideation.

Non- psychotic depression is a serious life long struggle and challenge. Its' prevalence is as high as 20% of the general population world wide and it is the most frequent neuropsychiatric cause of morbidity worldwide. It constitutes 30.8 and 3.37% of all neuropsychiatric and total burden of disease, respectively worldwide (Benazzi, 1998). Although the age of onset of non-psychotic depression is from childhood to about sixty years, the mean age of onset is approximately 24 years, with most cases commencing when individuals are aged 20-24 years (Paykel, 1978).

The aetiology and pathophysiology of non-psychotic depression has not been determined and no significant biological markers exist that corresponds precisely with the disease state. However, several lines of evidence, for example family, twin and adoption studies, suggest it is a familial disorder and that in majority of cases, there is a strong familial tendency (Weissman *et al*., 1997). Other factors known to be associated with non-psychotic depression are exposure to trauma and stress, pessimistic personality and serious medical illness like cancer, heart failure and Human Immunodeficiency Virus (HIV) infection. Other psychological disorders like anxiety disorders, eating disorders and substance abuse often coexist with depression.

Non-psychotic depressives lose a great deal of weight and in most cases appetite does not start to return until recovery begins. This and a gain in weight in patients who have lost a lot of weight, is probably the best objective sign of progress (Benazzi, 1998). It is almost axiomatic that non- psychotic depressives who apparently recover with treatment but do not regain at least some of the weight they have lost during the course of their illness almost invariably relapse. This assertion was however not supported by a study on forty seven patients by Kupfer *et al.* (1979). Unfortunately, weight changes during treatment may assume a worrisome proportion as some patients actually become over weight or obese. This has the tendency of affecting patients' compliance to medications (Berken *et al*., 1984).

Although a good number of research articles have been published concerning the pattern of increase

Corresponding Author: P.C. Stanley, Department of Mental Health, University of Port Harcourt Teaching Hospital, Port Harcourt, Nigeria

appetite and weight changes in non-psychotic depressive patients responding generally to antidepressant therapy, there is a dearth of information on weight response of Nigerian Africans to antidepressive medications. This study sets out to determine the pattern of weight changes among adult Nigerian non-psychotic depressives on amitriptyline therapy and to determine the factors associated with these patterns.

MATERIALS AND METHODS

Study design: The study was carried out in both the wards and out- patient departments of the University of Port Harcourt Teaching Hospital (UPTH) and the Rumuigbo Neuropsychiatry Hospital, Port Harcourt. A total of 25 subjects of both sexes who met the DSM-IV criteria for non-psychotic depression were recruited for the study after giving informed consent. Another 25 healthy individuals matched for age and sex with the depressive patients were recruited as controls after exclusion of any history of chronic illness, metabolic disorders, mental illness and drug or substance abuse in such individuals.

All recruited patients and controls were interviewed to obtain their socio-demographic data. They were then weighed with a Seca 881 Digital Floor weighing Scale, in very light clothing. Their heights were determined with a specially designed upright meter ruler and body mass index was then calculated as a product of weight (in kilogram) divided by the squared product of the height (in metres). Thereafter, depressive subjects were placed on 25-50 mg amitriptyline daily. Measurements for height and weight were taken (2) weeks and (6) weeks from the day of commencement of medications for each of the subjects.

Similarly, controls had their weight and height measure at 2 and 6 weeks after the initial recruitment.

Statistical analysis: Statistical analysis of result was done using simple statistical methods including calculation of means, frequencies, cross tabulation and an Analysis of Multiple Variance (ANOVA) test using SPSS 11. A p value of less than 0.05 was considered statistically significant.

RESULTS AND DISCUSSION

Nine males and sixteen females with a mean age of 36.6(±9.75) years were recruited after a diagnosis of non-psychotic depression. The control group was made up of 16 males and 9 females with a mean age of 28.8 (+ 8.97) years.

Table 1: The mean body mass index of the patient

	Entry point	Week two	Week six	p value
Study group mean Height (m)	1.55±0.06	1.55±0.06	1.55±0.06	
Control group mean Height (m)	1.67±0.08	1.67±0.08	1.67±0.08	>0.05
Study group mean weight (kg)	64.76 ±15.3	66.61±15.3	71.02±15.5	
Control group mean weight (Kg)	64.60±8.7	64.20±8.7	64.60±8.7	<0.05
Study group mean BMI(kg m^{-2})	26.99±6.0	27.76±5.9	29.58±5.9	
Control group mean BMI(kg m^{-2})	23.31±3.6	23.17±3.6	23.32±3.7	<0.05

This study showed a progressive increase in the mean body mass index (BMI in Kg m^{-2}) of the patients on amitriptyline from 26.88±6.0 before commencement of treatment to 27.76 ±5.91 after two weeks of therapy and 29.58±5.94 after 6 weeks on medication. These values reflected a significant difference from those obtained in the control group at the same treatment intervals as shown on Table 1. This finding correlates previous studies in Caucasian populations and has been shown to be unrelated to patient's age, sex, severity of depression, obesity and weight loss during depression (Fernstrom and Kupfer, 1988; Berken *et al*., 1984).

Amitriptyline like other antidepressants induces alterations of appetite regulating mechanisms which results in weight changes. Amitriptyline can cause weight gain in several ways. It often decreases basal metabolic rate without changing caloric intake. It may also affect hormonal changes and increase appetite for food. It induces craving for food rich in carbohydrate (Kulkarni and Kaur, 2001). Similar mechanisms are thought to be at play in weight gain associated with other antidepressants like fluoxetine and buproprion.

A number of endocrine, metabolic and neurochemical relationship may cause amitriptyline-induced weight changes. Amitriptyline's serotonergic, noradrenergic and histaminic receptor affinities, relative to its muscarinic affinity may be implicated in weight gain. Recent research on the relationship between antidepressants and leptin, a hormone that indirectly regulates weight, suggest an association between amitriptyline-induced increase leptin serum concentration which may result in insulin resistance and weight gain (Berilgen *et al*., 2005). However, specific aspect of this relationship has not been determined.

Excessive weight gain is a notable risk factor for hypertension, dyslipideamia, diabetes mellitus and metabolic syndrome, with their associated complications and high mortality rates (Zimmermann *et al*., 2003). Weight changes may lead to increase stigmatization and discrimination and may lead to medication noncompliance. Poor drug compliance subsequently may lead to relapse

of depression and a poor long-term prognosis. However, minimizing excessive weight changes in non-psychotic depressive subjects may improve drug adherence and treatment outcomes. There is therefore, need for intense research efforts towards the introduction of drugs without such adverse effects. This will not only encourage compliance but will guarantee remission of symptoms and the general well being of depressive subjects.

The results of this study should be viewed within the context of its limitation. Environmental and subject-related factors, such as diet and exercise, were not controlled and thus could have influenced the findings.

CONCLUSION

This study suggests that amitriptyline is associated with weight gain and increased BMI in Nigerian Africans with non-psychotic depression. This is similar to results obtained among Caucasian subjects. There is a need for clinicians to routinely monitor weight and BMI in non-psychotic depressive patients taking amitriptyline. Further studies are necessary, especially in Nigeria to determine the relative risk, magnitude and time course of antidepressant- induced weight changes in non-psychotic depressive patients.

REFERENCES

American Psychiatric Association, 1994. Diagnostic and Statistical Manual of Mental Disorders: DSM-IV. 4th Edn. Washington, D.C: APA Press.

Benazzi, F., 1998. Weight Gain in Depression Remitted with Antidepressants: Pharmacological or Recovery Effect? Psychotherapy and Psychosomatics, 67: 271-274.

Berken, G.H., D.O. Weinstein and W.C. Stern, 1984. Weight gain: A side-effect of tricyclic antidepressants. J. Affect Disord., 7: 133-138.

Berilgen, M.S., S. Bulut, M. Gonen, A. Tekatas, E. Dag and B. Mungen, 2005. Comparison of the effects of amitriptyline and flunarizine on weight gain and serum leptin, C peptide and insulin levels when used as migraine preventive treatment. Cephalalgia, 25: 1048-53.

Fernstrom, M.H. and D.J. Kupfer, 1988. Antidepressant-induced weight gain: A comparison study of four medications. Psychiatr. Res., 26: 265-71.

Kulkarni, S.K. and G. Kaur, 2001. Pharmacodynamics of drug-induced weight gain. Drugs Today (Barc), 37: 559-571.

Kupfer, D.J., P.A. Coble and D. Rubinstein, 1979. Changes in weight during treatment for depression. Psychosom. Med., 41: 535-544.

Paykel, ES., 1978. Contribution of life events to causation of Psychiatric illness. Psychol. Med., 8: 245-253.

Weissman, M.M., V. Warner, P. Wickramaratne, D. Moreau and M. Olfson, 1997. Offspring of depressed patients. Ten years later. Arc. Gen. Psychiatr., pp: 54.

Zimmermann, U., T. Kraus, H. Himmerich, A. Schuld and Pollmacher T. Epidemiology, 2003. Implications and mechanisms underlying drug-induced weight gain in psychiatric patients. J. Psychiatr. Res., 37: 193-220.