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Case Study

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A CASE STUDY ON SEVERE SUBSTANCE INDUCED PSYCHOSIS WITH DIABETES MELLITUS OBSERVED IN TERTIARY CARE HOSPITAL

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ABSTRACT

Background: Substance Induced Psychosis is a serious addictive condition developed from Substance use disorder characterized by addiction and abuse of CNS suppressant drugs (sedative, hypnotics, cannabis, opioid analgesics). The condition becomes worse in addition to uncontrolled diabetes and its associated secondary complications. **Case Presentation**: The current article deals with a 43-year-old male patient reporting with 17 years of smoking, 12 years of drug abuse and 10 years of uncontrolled diabetes mellitus. The patient had complaints of assaultive behavior, sleep disorder and frequent anger outburst. The patient was treated with Injection Haloperidol 5mg/mL + Injection Lorazepam 4mg/mL, Tablet Lorazepam 2mg, Tablet Trihexyphenidyl 2mg, Injection Thiamine 100mg, Tablet Diazepam 5mg, Tablet Chlorpromazine 25mg, Tablet Sodium Valproate 200mg. The patient was further counseled on discharge to improve his quality of life. **Conclusion**: Diabetes with Psychosis is a very sensitive yet challenging association of diseases and may result in long term complications if under-diagnosed and not treated properly with care. They actively play a role in monitoring the patient closely and reporting ADR and drug interactions in time to avoid diverse complications. Therefore, clinical pharmacy services are highly recommended to hand out as a bridge in ample levels of Health care.

KEYWORDS: Substance Induced Psychosis, Addiction, Uncontrolled diabetes, Clinical Pharmacist, Health care.

INTRODUCTION

The association between diabetes and psychosis is more complex. In addition to these traditional risk factors, people with psychosis have unique risks that might have additive or even synergistic effects. These risks include the use of antipsychotic medication, the effects of adverse social determinants of health, and genetic load. Diabetes is highly prevalent in people with psychotic disorders; exact prevalence is difficult to estimate, since diabetes is often under-diagnosed in people with psychosis. Results of several studies shows the prevalence of diabetes exceeds in general population with documented prevalence in those with psychosis ranging from 1·26% to 50% across studies.[1] It is Evident that the rates of diabetes are increased in individuals with psychosis and many of these patients are neither diagnosed nor treated, resulting in increased diabetes-associated morbidity and mortality. The Interventions at both the clinical and public health aspects are needed to be addressed successfully. Management of psychosis takes priority about the potential treatment, but the prevalence of the later requires that all patients taking anti-psychotic agents be actively screened and treated. Patients treated with anti-psychotic agents need baseline and regular checks, including weight, blood glucose, lipid levels and blood pressure. Management of psychosis with its attendant medical problems requires a multi-disciplinary approach, with primary health practitioners playing a central role. The requisite for clinical pharmacist starts here, clinical pharmacist bridges the gap between the patients and the health care team by improving the communication and rapport with the patients which serves essential to make sure that they feel satisfied with the care and outcomes. It's important study among all topics, because in the 21st Century People are getting lots of mental distress in their mind, it leads to more probable psychosis incidence. Moreover, Lifestyle and food habits are totally changed leading cause of prevalence. We are looked a similar patient from the South Indian Tertiary Hospital, we have detailed an elaborately report of the case with complications and overcomes from that being a Clinical Pharmacist.

CASE PRESENTATION

A 43-year-old male patient was admitted in the hospital with c/o decreased sleep, frequent anger outburst, assaultive behavior.

Social history

Consumption of alcohol (thrice a week) – 12 years, Consumption of Nitrazepam, lorazepam, clonotril, Consumption of Cannabis (daily) – 12 years, Smoking since past 17 years, DARVIN 5 and 10mg – Dextropropoxyphene Paracetamol (centrally acting opiate analgesics), ZOLFRESH (Zolpidem) – Hypnotic and sedatives (habit forming)

Past medical history: Known case of DM for 10 years and was not in regular treatment.

Personal history: The patient was working as a Junior Assistant and holds a B.A. English Literature. Religion: Christian.

Family history: Fig 1 shows the pedigree chart of the subject revealing the Alcohol Dependence Syndrome (ADS) in paternal uncle, maternal uncle and maternal grandfather. Thus it is evident that his wife is the positive carrier of the gene since she has two defective genes.

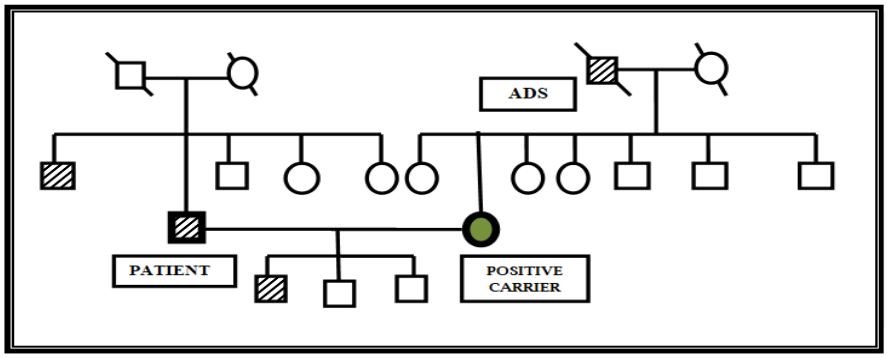

Fig 1: Genealogical chart of the subject: showing history of Alcohol Dependence Syndrome in Paternal uncle, maternal uncle and maternal grandfather.

Lab investigations

Table 1: Laboratorial Investigations of the patient

Diagnostic parameters	Patient values	Normal values	Inference
Red Blood Cells	4.5mill/cc	3.8-.4.8 mill/cc	Within limits
Hemoglobin	14.2 g/dl	12-17 g/dl	Within limits
Random Blood Sugar	149 mg/dl	80-140 mg/dl	Increased
Urea	27 mg/dl	7-18 mg/dl	Increased
Creatinine	0.9 mg/dl	0.6-1.3 mg/dl	Within limits
PPBS	166 mg/dl	80-140mg/dl	Increased
ESR	10 mm/hr	5-20mm/hr	Within limits
Temperature	98.5° F	98.4°F	Within limits
Blood pressure	110/80 mm/hg	120/80 mm/hg	Decreased
Pulse rate	92/min	71-75/min	Increased
Respiratory rate	22 breaths/min	12-20 breaths/min	Increased
Total count	6200 cu.mm	4000-11000 cu.mm	Within limits
Plasma Cell Volume	41%	41-59%	Within limits
SGOT	22 U/L	15-17 U/L	Increased
SGPT	18 U/L	30-65 U/L	Decreased
Alkaline Phosphate	130 U/L	50-136 U/L	Within limits
Total Protein	7.2 gm/dl	6.4-8.2 gm/dl	Within limits
Globulin	5.2 mg/dl	2.0-3.5 mg/dl	Increased
Albumin	2.0 mg/dl	3.4-5.0 mg/dl	Decreased
Sodium	1.4 mmol/l	0.6-1.3 mmol/l	Increased
Potassium	3.1 mmol/l	3.5-5.0 mmol/l	Decreased
Chlorine	103.2 mmol/l	96-108 mmol/l	Within limits

DIAGNOSIS

Dsm-V criteria for substance use disorder

In 2013 the American Psychiatric Association (APA) released a new edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5). The DSM-5 reflects significant changes in how substance use disorders are defined and in the diagnostic criteria of certain disorders (APA, 2013b. The 11 criteria for

substance use disorder are divided into four categories of behavior related to the substance use.

- Impaired control
- Social impairment
- Risky use
- Pharmacological indicators (tolerance and withdrawal).

Table 2: ICD-10-CM, DSM-V Diagnostic criteria for Substance Use Disorder (ICD-10-CM (International Classification of Diseases, Tenth Revision, and Clinical Modification) and DSM is Diagnostic and Statistical Manual of Mental Disorders is the essential diagnostic tools to diagnose substance use disorder and other mental disorders. BLUE color denotes the presence of the symptoms in the subject.

1.	Taking the substance in larger amounts or for longer than you're meant to.
2.	Wanting to cut down or stop using the substance but not managing to.
3.	Spending a lot of time getting, using, or recovering from use of the substance.
4.	Cravings and urges to use the substance.
5.	Not managing to do what you should at work, home, or school because of substance use.
6.	Continuing to use, even when it causes problems in relationships.
7.	Giving up important social, occupational, or recreational activities because of substance use.
8.	Using substances again and again, even when it puts you in danger.
9.	Continuing to use, even when you know you have a physical or psychological problem that could have been caused or made worse by the substance.
10.	Needing more of the substance to get the effect you want (tolerance).
11.	Withdrawal, as manifested by either of the withdrawal symptom for the substance or when the same substance is taken to relieve the withdrawal symptoms.

The severity of the substance use disorder is determined by the number of criteria the person meets:

1. Mild: 2 or 3 criteria out of 11
2. Moderate: 4 or 5 criteria out of 11
3. Severe: 6 or more criteria out of 11

Mental status examination

The mental status examination is a prearranged assessment of the patient's behavioral and cognitive functioning.

Entered interview room by himself, Takes the seat effectively, Gaze contact made, PMA alert, Ambulant, Keeps getting up from the chair and wants to leave, Excessive talk +, Relevant replies, Mood – "I'M FINE", Irritable effect, Thought form +, No delusions, No death wishes, No perceptual disturbances, Higher mental function.

DISCUSSION

From Table 1 it is evident that patient has uncontrolled diabetes and the variation of liver enzymes values (SGOT, SGPT) shows liver injury because of the alcohol abuse for more than 12 years. This should be strictly checked before the prescribing medications, as certain drugs have much higher metabolic rates which directly involves the liver enzymes and can worsen the condition. Also from Table 1 kidney abnormalities can be predicted with apparent fluctuation in levels of urea, electrolytes (sodium, potassium) and proteins (albumin, globulin). The DSM – V and Mental Status Examination were used to assess the patient and from Table 2 it is visible that the patient has been suffering from severe substance use disorder (with 6 positive criteria) and substance induced psychosis. Further the Mental Status Examination makes the diagnosis obvious by assessing patient's appearance and general behavior, level of consciousness and attentiveness, motor and speech activity, mood and affect, thought and perception, attitude and insight, the reaction evoked in the examiner, and, finally, higher cognitive abilities. The patient was treated with Injection Haloperidol 5mg/mL + Injection Lorazepam 4mg/mL, Tablet Lorazepam 2mg, Tablet Trihexyphenidyl 2mg, Injection Thiamine 100mg, Tablet Diazepam 5mg, Tablet Chlorpromazine 25mg, Tablet Sodium Valproate 200mg. The patient was further counseled on discharge to improve his quality of life. Further research should be done to treat uncontrolled diabetes in psychotic patient.

Diabetes Mellitus with Substance Use Disorder and Substance Induced Psychosis

Psychotic disorders focus mainly on the symptoms where the person is detached from reality, and the main such symptoms are delusions and paranoia. People experiencing psychosis may exhibit some personality changes and thought disorder. Depending on its severity, this may be accompanied by unusual or bizarre behavior, as well as difficulty with social interaction and impairment in carrying out daily life activities. In clinical practice, it is clear that the diabetics who are poorly endowed or emotionally unstable can pose a considerable therapeutic problem. Emotional influences on the course of diabetes and emotionally stressful experiences can produce fluctuations in levels of blood glucose and ketone bodies, both in diabetic and non-diabetic persons.[2] The pathway for such emotional origin would be via hypothalamic autonomic or pituitary endocrine relationships.[3] More such complications arising due to these co-morbid diseases are widely grouped into psychological, physiological and psychosocial problems.

Neurotic developments or disturbed family relationships, and hypochondriacal attitudes may be established and Eating disorders including bulimia, anorexia nervosa more common. There is always a difficulty in adhering

to treatment especially during loneliness, depression or tension. Also there is delayed psychosexual development when diabetes sets in an early age.[4] Increased frequency of impotence in men and anorgasmia in women are also seen.[5,6]

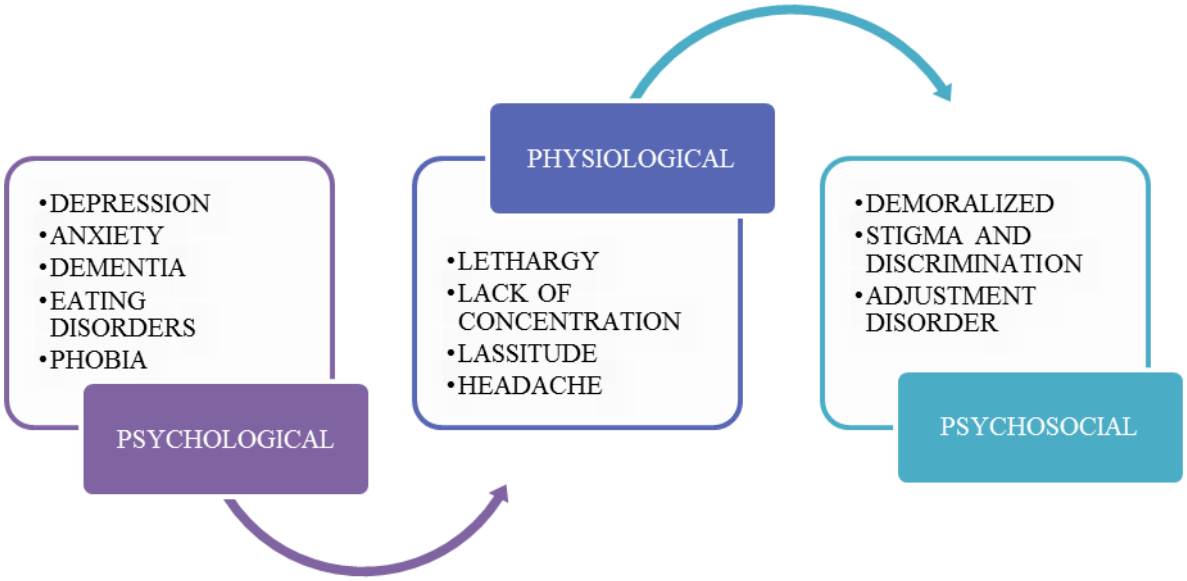

Fig 2: Chart showing various clinical features and traits in subjects with Diabetes Mellitus associated Psychiatric disorder.

This may cause lassitude, depression, undue difficulty in waking, early morning headaches, nocturnal fits, appear pale, apathetic, torpid and demoralized, others complained of lethargy, depression and difficulty in concentration.[7] Fig 2 shows the clinical features and traits in various levels. Notably we can see that these symptoms can possess higher threat for complicated and serious mental conditions in future. In management of manic depressive illness in diabetics it may sometimes be necessary to consider the possibility that insulin requirements increase during markedly depressive phases.[8]

Persons with diabetes were twice as likely to have depression compared to those without diabetes. Episodes of hypoglycemia or diabetic coma may have contributed to brain damage, or associated atherosclerosis may be responsible. Diabetes is difficult to manage as such, but patients with mental health disorders receive even less intensive medical care for diabetes.[9]

Anti-depressant medications Vs Glycemic Control

Tricyclic antidepressants are found to stimulate appetite. Selective Serotonin Reuptake Inhibitors (SSRI's) suppress appetite, enhance insulin sensitivity and lead to hypoglycemia if diet is not regulated. Besides, once depression is treated; eating habits, exercise and drug compliance may change, leading to unstable metabolic control. In the presence of autonomic neuropathy tricyclic antidepressants may worsen orthostatic hypotension, induce constipation and urinary retention.[10]

A similar hierarchy exists for hyperlipidemia. However, a recent study from India which compared the use of olanzapine and haloperidol/trifluoperazine for 12 weeks did not find any change in glycemic status, weight or body mass index.[11] There is a correlation between direct stimulation of appetite via feeding areas of the brain and Indirectly by endocrine effects such as hyperprolactinemia, decreased gonadal levels and hypercortisolism. Drug-induced insulin resistance, either directly or via stimulation of cytokine production interfere with glucose transport across membranesto cause further complications.[12] Cooperation in treatment of psychiatric illness along with diabetes mellitus is essential. This indicates that psychological stresses can be important in aggravating the disorder or precipitating episodes of loss of control, and even suggests that emotional factors may sometimes bring the disorder in to being.

ROLE OF CLINICAL PHARMACIST

The objective of the case study on Diabetes on Psychosis is very sensitive, because both the Diabetes and Psychosis are most complicated social and public health problems. We have to focus on role of clinical pharmacist in improving medication adherence, Adverse Effects, Drug-Drug Interaction, Therapy outcomes and how to improve the quality of life by providing patient-specific services through patient education. Pharmacists have to check on their patient's understanding and concerns, clarifying any misconceptions related to their drug therapy plan to effectively address non-adherence in their counseling. In this way, we have to follow up and monitor the patient closely. We have to frame the treatment objectives for themselves for getting out

themselves from the Psychosis and also from the diabetes complications. Counseling patients at the time of discharge and regular follow-up improves patient's medication adherence and treatment satisfaction and consequently improves clinical outcomes.Clinical Pharmacists should also provide ongoing optimization and monitoring of prescribed drug therapy, safety, effectiveness, and drug interactions to avoid serious complications and poor treatment outcomes and also improve the quality of life of the patient. The objectives of the case study can be achieved by performing some of the clinical techniques such as Therapeutic Drug Monitoring, Medication History Interview, Pharmaceutical Care, ADR Monitoring, and Patient Ccounseling.

CONCLUSION

The current case study proposes the obligation of role of clinical pharmacists in rehabitalization and psychiatric medicine also by playing a definite role in serious co morbid conditions. Diabetes with Psychosis is a very sensitive yet challenging association of diseases and may result in long term complications if under-diagnosed and not treated properly with care. Thus, it is unfeasible to educate the patient on disease, various risk factors and their prevention strategies. Clinical pharmacist should come-up with a different choice of improving the patient outcomes with a wide range of psychological therapies (Cognitive Behavioral Therapy, Occupational therapy) along with pharmacological therapy. This can be further more beneficial in monitoring the patient closely and reporting ADR and drug interactions in time to avoid diverse complications. Therefore, clinical pharmacy services are highly recommended to hand out as a bridge in ample levels of Health care.

ABBREVIATIONS USED

ADR: Adverse Drug Reactions; DSM: Diagnostic and Statistical Manual of Mental Disorder; PMA: Primary Mental Ability; APA: American Psychiatric Association; ICD-10-CM: International Classification of Diseases, Tenth Revision, Clinical Modification; SSRI: Selective Serotonin Reuptake Inhibitor; RBC: Red Blood Cells; ALP: Alkaline Phosphatase; PPBS: Post Prandial Blood Sugar; PCV: Packed Cell Volume; ESR: Erythrocyte Sedimentation Rate; SGOT: Serum Glutamic Oxaloacetic Transaminase; SGPT: Serum Glutamic Pyruvic Transaminase; mg: milligrams; mg/mL: milligrams/milliliter; cells/µL: cells/microliter; g/dL: grams/deciliter; mg/dL: milligrams/deciliter; mm/hr: millimeters/hour; U/L: units/liter; mmHg: millimeters of mercury; cu.mm: cubic millimeter; mmol/L: millimoles/Liter.

CONFLICT OF INTEREST

No potential conflict of interest was reported.

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