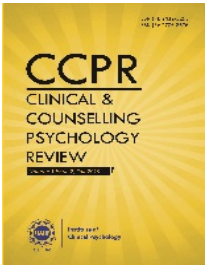

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Article: **Alpha-Interferon Induced Psychosis: A Single Case Study**

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Alpha-Interferon Induced Psychosis: A Single Case Study

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Abstract

Present study presented a case of 33 years old female who was diagnosed with Schizophreniform after taking Alpha-Interferon therapy for her Hepatitis. She presented with complaints of suspiciousness against family members and doctors, poor medication adherence, and social withdrawal. The study aimed to find out the efficacy of Cognitive Behavior Therapy in the treatment of symptoms of Schizophreniform. A single case ABA research design was used. The assessment of the patient was done through clinical interview, Mental State Examination (MSE) and Visual Analogue Scale Ratings of presenting complaints, and Positive and Negative Syndrome Scale for Schizophrenia (PANSS). The results of the study showed that there was a significant decrease in the severity of symptoms which showed that CBT is an effective mode of treatment for dealing with the symptoms of Schizophreniform.

Keywords: Schizophreniform, Cognitive Behavior Therapy, Positive & Negative Symptoms, Hepatitis C, Alpha Interferon

Introduction

Chronic Hepatitis C is one of the fatal world health illnesses (World Health Organization [WHO], 2018), and it affects the brain metabolism and tissues (Adinolfi et al., 2015). According to World Health Organization (WHO), hepatitis has affected about 3% of the world population (WHO, 2018). However, its prevalence varies across different countries, as 2 million patients were reported in Japan, 2.7 million in the US, 5 million from Europe, and about 10 million patients from Pakistan were reported (Hamid et al., 2004).

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Research evidence showed that Interferon-alpha (IFN-α) and ribavirin are effective treatments for chronic hepatitis B and C (Schaefer et al., 2012) but it leads to an increased risk of severe psychiatric effects like depression, suicide attempts or psychotic episodes (Schaefer, 2012). Psychosis (including hallucinations and delusions) is a potential side effect of interferon-based hepatitis C treatment regimens (Silverman et al., 2010).

Such side-effects may act as a risk factor for the failure of treatment, and majorly affect the quality of life and reduction in therapeutic alliance of patients (Cheng et al., 2009). Therefore, there is a need to encounter the symptoms at an earlier stage in order to prevent further escalation in symptoms. Carrillo de Albornoz Calahorro et al. (2019) presented a case of a patient affected with Hepatitis C, experiencing psychotic symptoms after getting treated with IFN.

Schizophreniform Disorder is characterized by the presence of two or more from delusions, hallucination, disorganized speech, grossly disorganized or catatonic behavior and negative symptoms (i.e., diminished emotional expression or avolition), for a period of at least one month but less than six months (American Psychiatric Association, 2013). The life-time prevalence of Schizophreniform disorder is just 0.07% (Perala, 2007; Silverman et al., 2010).

The current case study also described the case management of a woman who experienced the symptoms of Schizophreniform after getting the treatment of Interferon-alpha (IFN-α) for hepatitis C. After the treatment of Hepatitis C, Ms. X started experiencing sadness, helplessness, loss of appetite, sleep disturbances, body aches and pains, lack of interest in daily activities and difficulty in performing her job-responsibilities. She stopped interacting with her family with no adherence to medicine. She became suspicious against her family and started living alone. She started believing that her condition became severe only because her brothers and their wives had given her wrong treatment, intentionally, because all of them wanted her money. Furthermore, she believed that her sister-in-law had taken her to a wrong doctor and subjected her to painful injections, and then afterwards she had given her poisonous food so that she would die soon, because all her family was planning to get her money.

Moreover, when she was taken to hospital for treatment, she believed that her family had already made an alliance with the doctors and hospital staff therefore the doctor would also give her poison and would facilitate her family to make her death certificate. So that it would be easy for the patient's family. Ms. X's symptoms were treated by taking the psychiatrist's opinion and psychotherapy was implemented accordingly, therefore adding a unique finding to the clinical literature that how alpha-interferon-induced psychotic symptoms can be treated by using adjunctive psychotherapy.

Methodology

Research Design

A single sample ABA research design was used to assess the efficacy of CBT techniques in the treatment of schizophreniform after alpha-interferon therapy.

Sample

The sample comprised of a single patient, Ms. X (N = 1), 33 years old having symptoms of paranoia against family, being delusional about treatment and hospital staff, lack of medicine compliance, irritability, sleep disturbances, body aches, anger outbursts, social withdrawal, and suicidal ideation.

Case Presentation

Ms. X was 33 years old, last born among 6 siblings. She had done B.A and was a junior teacher in a government school. She was engaged to her second cousin and belonged to an upper-middle-class family. Ms. X reported that in 2015, she was diagnosed with Hepatitis C. She had severe muscle aches and body pains, and she was not able to do house chores and fulfill her job responsibilities. She became extremely tense and was worried about her health. She was prescribed Interferon Injections (Peg. Interferon-24) for her treatment but she was careless about taking medicines, showed poor treatment compliance, and did not take medicines regularly. She became tense about her illness and started believing that she had acquired a serious illness, and would die soon. Medicines were also prescribed to deal with the side effects of Interferon Injections but she did not take them as well. Therefore, her eldest brother forcefully took her to the doctor to

complete the course of treatment. The patient had undergone the treatment of Hepatitis C for one year but with poor medication compliance.

When the patient had undergone the painful treatment of Hepatitis C, she started believing that this treatment was not accurate and also destroying her health even more. After the treatment of Hepatitis C, Ms. X started experiencing sadness, helplessness, loss of appetite, sleep disturbances, body aches and pains, lack of interest in daily activities, and difficulty in performing her job responsibilities. She stopped interacting with her family and started living alone. Then in April 2016, she was taken to a doctor in Sahiwal, who prescribed her anti-depressants but she did not take the medicines properly.

Afterward in June 2016, initially she became suspicious of her family and started living alone. She did not like to interact with anyone and preferred to sit purposeless in her own room for longer durations. She stopped eating food that her sister-in-law used to cook, and believed that her sister-in-law had intentionally added some poison or citric acid to food. She started to put allegations about her brothers and their wives. She started blaming her brothers that they had taken her to an incompetent doctor who had prescribed her poor-quality medicines. She started believing that her condition became severe only because her brothers and their wives had given her wrong treatment, intentionally, because all of them wanted her money. She started believing that her sister-in-law was mixing poison in her food. She believed that her sister-in-law was giving her citric acid intentionally (which was damaging to her health), and she was convinced that her sister-in-law used to sneeze in her food which added the citric acid to her food. Furthermore, she believed that her sister-in-law had taken her to the wrong doctor and subjected her to painful injections, and then afterward she had given her poisonous food so that she would die soon because all her family was planning to get her money.

According to the patient's brother, she used to say that she would have committed suicide if it was not prohibited in religion because she could not do anything when her own family was planning against her. The patient believed that her family had made the duplicate checkbook and had taken her money from her account. In addition to this, she also believed that her brothers had aborted her job and had taken all her G.P Fund because there

was a cancellation stamp on her pay slip. Moreover, she believed that her sister-in-law wanted to take all her money and jewelry so that she could benefit her own daughters. Therefore, her sister-in-law and family had replaced it with the duplicate one. The patient reported that her family wanted to kill her because she was engaged to her cousin and her sister-in-law did not like it that she was going to get married. She thought that her sister-in-law wanted her own daughter to get engaged to the patient's fiancé; therefore, she had taken her jewelry too and replaced her original jewelry with the duplicate one.

Moreover, when she was taken to Services Hospital for the treatment she believed that her family had already made an alliance with the doctors and hospital staff therefore the doctor would also give her poison and would facilitate her family to make her death certificate. So that it would be easy for the patient's family to take all of her legacies. Therefore, she was referred by a psychiatrist for psychological assessment and management.

Assessment

The assessment of the client's complaints was done on an informal and formal level.

Informal Assessment

Mental State Examination. It revealed that she appeared underweight and had appropriate height. She was well-dressed and maintained fair hygiene. She was conscious and overly concerned during the session. She was uneasy and uncomfortable while giving history. The rapport was maintained with difficulty by repeatedly assuring her about confidentiality. The patient reported her mood as sad and irritable. She had poor insight into her illness. Ms. X was preoccupied with the thoughts of persecution and harm. The patient did not report any obsessions or compulsions. She believed that her family would kill her and would take all her legacy. She believed that her family was giving poison to her and would kill her. The patient did not report any hallucinations or perceptual disturbances. The patient's orientation regarding person and place was not intact. She believed that this was not a hospital but a drug abuse center where the patients were given drugs. Moreover, she reported that all the patients in the ward were dummy patients and all the doctors had made an alliance with her family

members to kill her. However, she was oriented about time. The patient's attention and concentration were poor. She was not attentive during the session and was only preoccupied with the thoughts of persecution. The patient's short-term memory was mildly intact however her long-term memory was intact as she could report the significant events of her life appropriately. The patient's abstract thinking and judgment were also intact and had poor insight into her illness.

Subjective Ratings of Presenting Complaints. The therapist took the *Subjective Ratings* (see Table 1) about the problematic behaviors or presenting complaints of the patient, on a Visual Analogue Rating Scale 0 – 10 (Leahy, 2003).

Table 1

Pre and Post Ratings of Patient's Complaints on Visual Analogue Scale

Presenting Complaints / Symptoms	Pre-Treatment Ratings	Post-Treatment Ratings
Persecutory Delusions	10	1
Paranoid Delusion	10	1
Body Aches	9	2
Sleep Disturbances	9	2
Irritability	8	1
Anger Outbursts	7	2
Social Withdrawal	6	1
Suicidal Ideation	6	0

0 = No Problem; 5 = Average Problem; 10 = Severe Problem

Dysfunctional Thought Record was given to the patient to record her negative automatic thoughts or associated dysfunctional beliefs on daily basis (see Table 2).

Table 2

Functional Analysis of Patient's Dysfunctional Thought Record

Areas	Functional Analysis
Situation / Triggering Factors	• Eating Food • Niece bought eatables • Eldest Brother came to visit

Areas	Functional Analysis
	● Mother and Niece were awake at night
Automatic Thought	● This food contains poison to harm me ● She intentionally brought items that contain citric acid ● Brother only came just to show the world that he was sincere to me otherwise he wanted to kill me ● Mother and Niece were adding poison in my food
Behavior	● Eat only small amount of food ● Did not eat and drink items that were taken by niece ● Did not talk to him ● Said to mother that they were adding drug or poison in her food
Emotions / Feelings	● Felt sad ● Angry feelings ● Hopelessness ● Worthlessness ● Stressful

Formal Assessment

Positive and Negative Syndrome Scale for Schizophrenia

The formal assessment of the patient's symptoms was done by administering Positive and Negative Syndrome Scale for Schizophrenia (PANSS). The scores of the patient (see Table 3) on (PANSS) showed a significant elevation on the sub-scales of Positive, General Psychopathology, Paranoid Belligerence, and Depression as evident by respective t-scores and percentiles. The findings of the patient's symptomology on PANSS were also consistent with the patient's subjective ratings, as the patient had the highest rating on her delusional beliefs and the symptoms of depression were also significantly present (Kay et al., 1987).

On the basis of presenting complaints, detailed history, MSE, and psychological assessment, a diagnosis of 295.40 (F20.81) Schizophreniform was given to Ms. X.

Ethical Considerations

- Ms. X was informed about the procedure of therapy, the number of sessions, timings of the sessions and informed consent were taken from her for her volunteer participation in the case study.
- Confidentiality of information and anonymity of the patient was ensured and maintained
- Results were reported accurately and genuinely

Procedure

Case Conceptualization

Ms. X's case was conceptualized according to the model of Bell et al. (2006) (see Figure 1). The model described that the precipitating factor of the patient's illness was diagnosed with Hepatitis C and interferon treatment. Due to this, the patient experienced physiological (Body aches, sleep disturbances, and pain in the stomach), emotional disturbances (feelings of sadness and hopelessness), and cognitive changes (I will never be healthy after this dangerous illness). With the passage of time, the patient developed extreme cognitive biases (I will never have a healthy life). The patient attached meanings of her own choice to her beliefs and cognitive distortions (My sister-in-law was giving poison to me. She took me to the wrong doctor for treatment). She selected the explanation that was consistent with her belief system and developed a Threat Belief that she would have died soon.

Moreover, the perpetuating factors (see Figure 2) of a patient's illness were explained by the model of Freeman et al. (2002). The model explained that the patient had a pivotal tendency to obtain confirmatory evidence for her beliefs by using selection bias, negative filter, and jumping to conclusions. She tends to discard the disconfirming evidence and reinforce her Threat Belief which ultimately led to feelings of sadness, hopelessness, sleep disturbances, anxiousness, and restlessness. Likewise, the patient appraises the further events and experiences according to her dysfunctional belief system (Taken to the hospital, and believing with the firm conviction that she would be given a lethal injection), which facilitated the pathways towards the maintenance of her illness.

Figure. 1

Idiosyncratic Case Conceptualization (Bell et al., 2006)

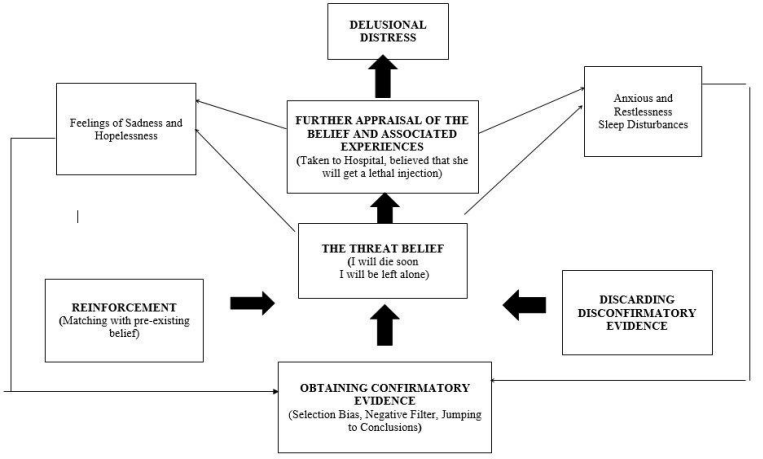
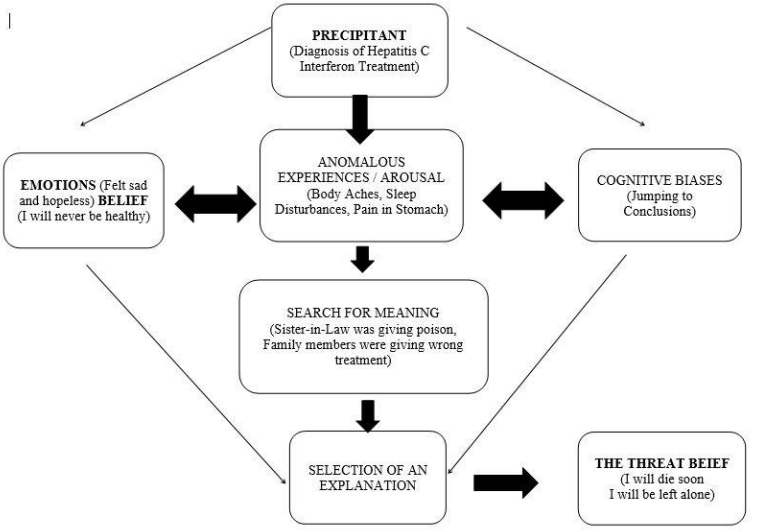


Figure 2

Maintenance of Persecutory Delusions (Freeman et al., 2002)



Case Management

The study was carried out at Services Hospital, Lahore. Cognitive Behavior Therapy Protocol was followed for Ms. X. Total of 16 sessions, from 45 minutes to 1 hour were conducted, once a week (For a summary see Table 4).

Initial sessions focused on assessing the patient's complaints, concerns and difficulties. After detailed clinical interview, the patient's problems were prioritized, the goals of the therapy were defined and the significance of homework assignments was discussed. Supportive work was done with Ms. X, a therapeutic alliance was made with her, and she was informed about the therapy protocol.

The patient was also informed about the causes, triggers, and perpetuating factors of her problem, and information was also given to her regarding her treatment, side effects of medications, and relapse prevention. The patient's family was also psycho-educated about the patient's illness and was asked not to confront the patient rigidly on her convictions. Normalization was done with Ms. X to help her reduce the catastrophization of her psychotic experiences (Hansen et al., 2006). The patient showed poor medicine compliance therefore she was instructed to take medicines regularly because she was not taking medicines because of her delusional belief that the doctors and nurses would give poison to her. Moreover, Cost-Benefit Analysis (Wells, 1997) was also done with the patient regarding her medication non-compliance. Progressive Muscle Relaxation was introduced to reduce the patient's muscle aches, body pains, and stress (Jacobson, 1938). Sleep Hygiene Tips were given to the patient, in Session 2, to manage her sleep disturbances. Initially, a brief psycho-education was provided regarding sleep and common sleep problems, how much sleep people need, and what causes or maintains the sleep problems, e.g. stress, anxiety, worry, depression, poor bedtime routine, lifestyle, surroundings, physical factors such as pain (Myers et al., 2013). Activity Scheduling Chart was aimed to achieve behavioral activation in order to lift a depressed mood, as it is recognized as an effective technique for people with psychosis (Smith et al., 2003). The patient was explained that she would feel improvement in her mood if she tried to involve herself in daily activities. The concept of behavioral activation and its impact on mood was explained

to her. She was asked to identify the activities that she could do on daily basis. Behavioral Experiments were used to challenge the beliefs of patients at the appraisal and schema level, and to provide a *reality testing procedure* to validate the particular predictions of the patient (Wells, 1997). Therefore, the *behavioral experiments* were introduced in Session 5 and done in Session 5, 6, and 7, and the patient was asked;

- To test her belief that her cheque book was not real. She was asked to go to the bank and cash a cheque from her cheque book.
- To test that all her money had been withdrawn, by her family from her account. She was instructed to call the bank and asked if the specific account was present or not and what amount of money it had.
- To test her belief that her jewelry was not real. She was instructed to show her jewelry to the jeweler and asked him if it was real or not.

In Session 7, Dysfunctional Thought Record was given to the patient and she was asked to record her thoughts and feelings on daily basis. She was asked to fill out the thought record form by identifying situations, feelings, automatic thoughts, and her behavior (Wells, 1997). Moreover, to identify the patient's distortions Triple Column Technique was used in Session 13. The concept of cognitive distortions and thinking errors was given to the patient, and she was explained how her unhelpful and self-defeating thoughts were maintaining her symptoms (Burns, 1999). After the identification of her dysfunctional beliefs, she was challenged through the technique of Evidence for and against (Leahy, 2003) in Sessions 10, 11, and 12. The patient was instructed to give evidence in the favor of her beliefs and thoughts, and also generate evidence against her beliefs. Pie Charts help to offer a range of alternative explanations for events with the aim of reducing the likelihood or probability estimates for catastrophic outcomes (Wells, 1997). After the identification of the patient's negative and catastrophic appraisals regarding her future and marital life, she was asked in Session 14, to list down the factors that cause marital failure in one's life and construct a pie chart to denote the role of every factor in causing marital failure.

Relapse Prevention was done in the last session and all the techniques were reviewed in the last session. The goals, treatment, and progress of the patient during the therapy were discussed. The patient's feedback was taken regarding the therapy. She told that she found the hospital environment supportive and she was able to challenge her dysfunctional beliefs (Kouimtsidis et al., 2007). A post-treatment assessment was also conducted in the last session to review the patient's progress and improvement in her symptoms. The patient was also instructed to practice the techniques regularly to prevent relapse. A therapy blueprint comprised of a brief recap of therapeutic intervention was also given to the patient.

Table 4

Summary of Sessions and Therapeutic Techniques Used

Summary of Therapeutic Sessions 1-15	
Session # 1 ● Rapport Building and Supportive Work ● Detailed History Taking through Clinical Interview ● Subjective Ratings of Presenting Complaints ● Mental State Examination	**Session # 9** ● Homework Reviewed ● Identification of Negative Automatic Thoughts
Session # 2 ● Psycho-Education of family Members ● Normalization ● Medicine Compliance	**Session # 10** ● Evidence for and against to challenge her belief about memory loss
Session # 3 ● Positive and Negative Syndrome Scale for Schizophrenia (PANSS) was administered	**Session # 11** ● Evidence for and against to challenge her belief that family was against her and wanted to kill her

Summary of Therapeutic Sessions 1-15

- Activity Scheduling Chart was given to patient

Session # 4

- Home Work Reviewed
- Progressive Muscle Relaxation
- Mastery and Pleasure Chart

Session # 5

- Homework Reviewed
- Peripheral Questioning
- Behavioral Experiments about Food Ingredients

Session # 6

- Peripheral Questioning
- Behavioral Experiment to check her cheque-book and bank account

Session # 7

- Peripheral Questioning
- Behavioral Experiment to check Jewelry
- Dysfunctional Thought Record

Session # 8

- Recount the Specific Episode

Session # 12

- Evidence for and against to challenge her belief that her sister-in-law was giving poison to her

Session # 13

- Triple Column Technique
- Rational Coping Responses

Session # 14

- Cost-Benefit Analysis for Medicine Non-Compliance
- Pie Chart to challenge her future apprehensions

Session # 15

- Relapse Prevention
- Therapy Blue Print
- Post-Assessment

Results

Therapy protocol that was explained to Ms. X helped her to identify her problems, to prioritize them on the basis of their intensity, frequency,

duration and its impact on her entire life. It also facilitates the therapist and the patient to set treatment goals. Case Conceptualization helped her to understand the causes and consequences of her illness. CBT therapy protocol helped the patient to recognize her dysfunctional thinking pattern and to replace them with rational responses. Similarly, behavioral experiments aid her to identify her delusions and helped her to challenge them. The patient reported the improvement in her mood and told that she found the rational coping responses helpful against her delusional beliefs.

A post-assessment at the end of therapeutic sessions on a Visual Analogue Scale (see Table 1), and Positive and Negative Syndrome Scale for Schizophrenia (PANSS) were administered (see Table 3). The post-assessment of the patient on the Positive and Negative Syndrome Scale for Schizophrenia (PANSS) depicted a significant improvement in the patient's symptoms, as evident by her t-scores and percentile on the sub-scales of Positive Symptoms, General Psychopathology, Paranoid Belligerence, and Depression. The scores of patients on the PANSS were also consistent with the patient's subjective ratings and with the reporting of her family.

Pre and post-assessment analysis showed that Ms. X had made progress in several areas. The therapy was fruitful for her, and Ms. X showed improvement in her symptoms and was satisfied with the treatment.

Table 3

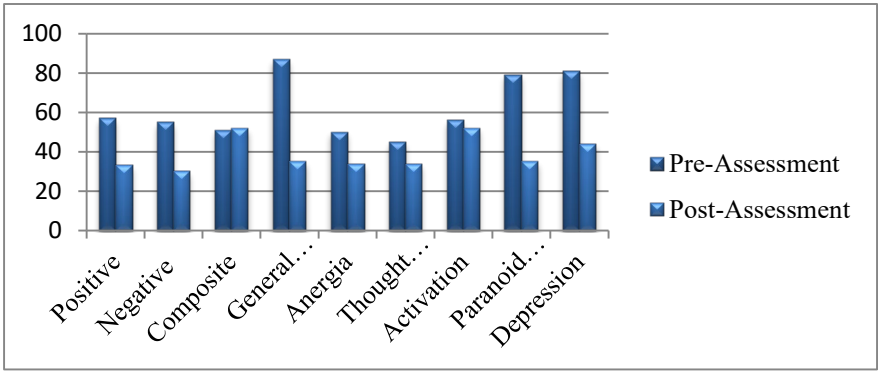
Shows the Raw Score, t-Score, Percentile, and Level of Significance for each sub-scale at Pre and Post-Treatment Levels

	Pre-Treatment Ratings				Post-Treatment Ratings			
Sub-Scales	Raw Score	t-Score	Percentile	Level of Significance	Raw Score	t-Score	Percentile	Level of Significance
Positive	24	57	76	Slightly above Average	9	33	5	Below Average
Negative	25	55	69	Average	9	30	2	Much Below Average
Composite	-1	51	54	Average	0	52	58	Average

Sub-Scales	Pre-Treatment Ratings				Post-Treatment Ratings			
	Raw Score	t-Score	Percentile	Level of Significance	Raw Score	t-Score	Percentile	Level of Significance
General Psychopathology	75	87	99	Very Much Above Average	25	35	7	Below Average
Anergia	10	50	50	Average	4	34	6	Much Below Average
Thought Disturbance	10	45	31	Average	5	34	6	Much Below Average
Activation	8	56	73	Slightly Above Average	7	52	58	Average
Paranoid Belligerence	16	79	99	Very Much Above Average	3	35	7	Much Below Average
Depression	20	81	99	Very Much Above Average	7	44	27	Slightly Below Average

Figure 1

Graphical Representation of Pre and Post-Treatment Formal Assessment



Discussion

Treatment was aimed to reduce the symptoms of Schizophreniform induced after alpha interferon therapy. Symptoms included delusions, body aches, sleep disturbances, irritability, anger outbursts, social withdrawal, suicidal ideation, and lack of medicine compliance. The therapeutic alliance was made by building a positive relationship with the patient, through active reflection, rapport building, and empathy. Confidentiality of the information was ensured, and she was engaged in therapy by active listening. Moreover, the patient's motivation and compliance, after rapport building, also aid in her therapeutic progress.

Published case studies showed evidence that alpha INF treatment may develop some psychiatric symptoms including psychosis (Cheng et al., 2009; Silverman et al., 2010). According to literature, 13% of patients with HCV under IFN-α treatment experienced symptoms of depression, anxiety, suicidal ideation, or psychosis (Calahorro et al., 2019).

Ms. X's symptoms were treated by using the techniques of Cognitive Behavioral Therapy (CBT), as its efficacy has been tested in a number of randomized control trials (Addington et al., 2011; Lincoln et al., 2012). The present study results also evident that CBT has been proved effective for the psychiatric side-effects of Hepatitis C Treatment (Ramsey et al., 2011; Elsafy et al., 2014). Hence it improved her symptoms.

The findings can be implied to inform health care practitioners, patients, and their families about the potential risk of psychiatric disturbances that may result due to IFN-alpha treatment of hepatitis C. Therefore, it is recommended to screen and monitor the patients with hepatitis C, after taking IFN-alpha therapy. Further research is required in Pakistan to identify the relative and differential effectiveness of CBT in the management of positive and negative symptoms of Schizophreniform.

Conclusion

It can be concluded in the light of the aforementioned factors that the patient's problem was triggered after the treatment of alpha-interferon and certain other factors maintained her symptoms even after the termination of

alpha interferon therapy. Hence through proper case conceptualization and using CBT techniques her Schizophreniform symptoms declined.

Limitations and Suggestions

By involving the patient in CBT therapy were reported to be the major strength of the study, as it facilitated her to deal with the positive and negative symptoms of patients, and their associated physiological and behavioral symptoms. Moreover, structured sessions, therapeutic alliance, and patient compliance with therapy were also a source of great advantage.

However, Ms. X had a history of medical non-compliance which might lead to a relapse of her symptoms. Therefore, medicine compliance and regular follow-ups were recommended for the patient. It was a single case study therefore the results can't be generalized to a larger population therefore it is recommended to find out the efficacy of CBT for a larger sample of patients with Schizophreniform.

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