Not all those who had fever had COVID: A case report of Anorexia Nervosa subjected to cognitive bias during the COVID-19 pandemic

Arundhati G Diwan[1], Aditya A Godbole[2], Aarohi Y Doshi[1], Anita T Anokar[3], Jyoti V Shetty[4]

[1]*Department of General Medicine, Bharati Vidyapeeth (DU), Medical College and Hospital, Pune, Maharashtra, India*
[2]*Bharati Vidyapeeth (DU), Medical College and Hospital, Pune, Maharashtra, India*
[3]*Department of Respiratory Medicine, Bharati Vidyapeeth (DU), Medical College and Hospital, Pune, Maharashtra, India*
[4]*Department of Psychiatry, Bharati Vidyapeeth (DU), Medical College and Hospital, Pune, Maharashtra, India*

Corresponding Author
Aditya A Godbole
E-mail ID: adityagodbole14@gmail.com

Background

Anorexia nervosa is an eating disorder characterized by restriction of energy intake with respect to the requirements, leading to lower body weight. Patients present with symptoms such as fear of gaining weight, persistent behavior that interferes with weight gain, and the influence of one's body weight on self-image[1]. It is one of the most significant psychiatric disorders, with a mortality rate 5.86 times higher than that of the general population[2]. During the pandemic, patients experienced problems with dietary schedules, changes in routine, and limited access to healthcare services that led to frequent episodes of relapse[3].

Cognitive bias is an unconscious error in thought processing that affects a doctor's decision-making ability[4]. Throughout the pandemic, clinicians conveniently had the diagnosis of COVID-19, and patients presenting with fever and cough experienced cognitive biases[5]. We present a case of anorexia nervosa that was provisionally diagnosed as COVID-19, only to be correctly diagnosed later after a thorough evaluation.

Case Presentation

A 26-year-old female was presented to the hospital with complaints of fever for three days, reduced appetite, weight loss (eight kg), and generalized weakness for three months. There was no history of cough, vomiting, hemoptysis, or prior comorbidities. These complaints prompted the clinician to admit the patient to the COVID ward, followed by Reverse Transcriptase Polymerase Chain Reaction (RT-PCR) testing. Tuberculosis was ruled out after appropriate investigations were performed.

After these procedures, a detailed history revealed a history of amenorrhea in the past five months. The patient's weight was 34 kilograms, height was five feet two inches, and body mass index was 13.7 kg/m^2. There was severe pallor, an emaciated look with loss of buccal fat pad, and muscle wasting of limbs (Figure 1). Systemic examination was unremarkable.

Figure 1: (A-standing and B-sitting) Examination of the patient. Visible muscle wasting of all four limbs present.

Table 1 summarizes the laboratory investigations. The electrolyte investigation revealed hypokalaemia and low serum phosphorous. Serum cortisol was within normal limits, and the CBC, TFT, and ABG were within normal limits. The COVID RT- PCR test was negative.

Table 1: Summary of Laboratory Investigations

Serial Number	Test Name	Test Result	Reference Range	Units
1	Serum Potassium	2.6	3.5-5.5	mEq/L
2	Serum Phosphorous	0.28	3.4-4.5	mg/dL
3	Total Serum Cortisol (8 AM)	8.5	5-23	mcg/dL
4	Serum Follicle Stimulating Hormone	1.68	Male: 1.4-15.4 Female: 4.7-21.5 Follicular Phase: 1.4 - 9.9 Ovulatory Peak: 6.2-17.2 Luteal Phase: 1.1-9.2 Post Menopause: 19.3-100.6	mIU/L
5	Serum Luteinizing Hormone	0.14	Male: 1.24-7.8 Female: 5-25 Follicular Phase: 1.68-15 Ovulatory Peak: 21.9-56.6 Luteal Phase: 0.61-16.3 Post Menopause: 14.2-52.3	IU/L

After establishing a rapport, the patient revealed a history that was consistent with depression. After psychiatry consult, the patient was diagnosed with anorexia nervosa (two days after assumption of COVID).

Patient was shifted out of the COVID ward. Feeds were started with a target weight gain of 0.5 to 0.9 kg per week. Electrolyte monitoring and weight charting were performed. Assessment for refeeding syndrome was performed daily. The patient received cognitive behavioral therapy. After achieving significant weight gain, the patient was discharged. On follow up at six months, the patient reported no complications, treatment failure, or relapse.

Discussion

The COVID-19 pandemic led to an increase in the incidence of psychiatric disorders on the one hand and reduced access to healthcare for these patients on the other hand. Isolation, social distancing, increased use of social media platforms, and disturbed diet and daily routine contributed to this rise in incidence[3]. These cases encountered cognitive bias in the hospital due to the large number of COVID-19 patients and the stress on the human resources of the healthcare industry.

This case is an example of how rapid initial assessment with cognitive bias led to the admission of patients in the COVID ward. Initially, the patient met with a cognitive bias called premature closure. It is an error where the clinician does not consider other differential diagnoses after suspecting a particular diagnosis[6]. The patient was admitted to the COVID ward without having the final reports of the RTPCR test. Another cognitive bias that comes into play here is the availability bias. It focuses on favoring recent and readily available solutions because of ease of recall and incorrectly perceived importance[7]. Here, the availability of COVID-19 cases influenced the clinician's diagnosis. Anchoring bias refers to the fixation on initial impressions to make a diagnosis. The highest importance was given to fever compared to the rest of the symptoms while arriving at an

initial diagnosis. The general and systemic examination findings were initially not taken into consideration. This patient did not have COVID-19, and contact with COVID-19 patients could have been avoided.

A similar study in the United States indicated the presence of different types of cognitive bias – premature closure, availability bias, anchoring bias, and framing bias while diagnosing a case of COVID-19. They suggested a guideline for avoiding cognitive bias that included considering three alternative diagnoses for each suspected case, a diagnostic time-out, and the inclusion of specialists in decision-making[5]. Considering alternative diagnoses will help to prevent premature closure, availability bias, and anchoring bias. A diagnostic time-out with a detailed review of history, examination, and investigations can prevent anchoring bias. A specialist opinion, like the involvement of a psychiatrist in this case, provides further insight. A thorough initial assessment aids in developing a good rapport with the patient, which can lead to the extraction of a great deal of detailed history. This will aid in initial diagnosis, recommendation of necessary investigations, and prompt referral to specialists. In this case, early extraction of the history of depression could have led to an early referral to a psychiatrist, prevented hospitalization in the COVID ward, and mitigated the risk of contracting COVID-19 infection.

Conclusion

Analysis of this case explains how cognitive bias influences fast decision-making and the course of treatment during hospitalization. We also suggest implementing various strategies to avoid these cognitive biases.

Conflict of Interest: Nil

Source of support: Nil

ORCiD

Aditya Godbole 0000-0003-1674-5034

Ethical consideration

Due to the COVID-19 pandemic, obtaining the patient's written consent for this purpose was not taken. However, verbal informed consent was obtained to present the case and publish it. The identity of the patient has not been disclosed in the case study.

Authors' Contribution

AD: Conceptualization, design, data collection, implementation, and manuscript writing; AG: Conceptualization, design, data collection, implementation, and manuscript writing; AD: conceptualization, design, data collection, implementation, and manuscript writing; AA: data collection, implementation, and manuscript writing; JS: data collection, implementation, and manuscript writing

Data availability statement

Data will be available with corresponding author on request.

References

1. Neale J, Hudson LD. Anorexia nervosa in adolescents. Br J Hosp Med (Lond). 2020 Jun 2;81(6):1-8. Epub 2020 Jun 1.

2. Dumitra cu MC, Şandru F, Carsote M, Petca RC, Gheorghisan-Galateanu AA, Petca A, Valea A. Anorexia nervosa: COVID-19 pandemic period (Review). Exp Ther Med. 2021 Aug 1;22(2):1-5. Epub 2021 May 26.

3. Arcelus J, Mitchell AJ, Wales J, Nielsen S. Mortality rates in patients with anorexia nervosa and other eating disorders: a meta-analysis of 36 studies. Arch Gen Psychiatry. 2011 Jul 1;68(7):724-31.

4. O'Sullivan ED, Schofield SJ. A cognitive forcing tool to mitigate cognitive bias - a randomised control trial. BMC Med Educ. 2019 DEC;19(1):1-8.

5. DiMaria CN, Lee B, Fischer R, Eiger G. Cognitive Bias in the COVID-19 Pandemic. Cureus. 2020 Jul 6;12(7).

6. Kumar B, Kanna B, Kumar S. The pitfalls of premature closure: clinical decision-making in a case of aortic dissection. BMJ Case Rep. 2011 Oct 7;2011:bcr0820114594. O'Sullivan ED, Schofield SJ. Cognitive bias in clinical medicine. J R Coll Physicians Edinb. 2018 Sep;48(3):225-232.