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World Report Article

Covid-19 in Iraq: an estimated cost to treat patients at a private clinic

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Abstract

The impact of the COVID-19 pandemic extended to health, social and economic aspects of human life. The international failure to combat this crisis has left many countries suffering under the influence of successive waves of the pandemic. In this report, we present a private medical clinic's experience dealing with the COVID-19 epidemic in Iraq. The adopted protocol to treat COVID-19 patients has briefly been discussed with an estimated cost of treatment in the private sector. We found that most COVID-19 patients recovered from the disease, except for cases that were associated with co-morbidities. The cost of treatment in the private sector is expensive, and most infected people could not afford it without public sector support.

Keywords: COVID-19, Private Clinic, Interleukin-6, Protocol, Estimated Cost, Diyala, Iraq

Background

Many cases of Coronavirus infiltrated Iraq early; however, the first case's official announcement was in the city of Najaf in March 2020 [1]. Most Iraqis underestimated the epidemic and largely neglected prevention measures. Among the Iraqis, the infection was considered a social stigma that forced many to hide the infection [2]. Such social behavior contributed to the worsening of the infected cases and the spread of the epidemic quietly and dramatically throughout the country. The world was not ready to deal with such a huge pandemic [3], especially in countries like Iraq, where the health system is depleted and reeling under the influence of rampant corruption [4].

Failure to comply with preventive measures has made the public health institutions an active source of transmitting the infection to the clients. Most of the healthcare providers were infected with COVID-19 and became a carrier of infection in their communities. Most patients are reluctant to contact public health institutions and resort to private medical clinics for treatment away from the people's eyes and in search of safety and quality [5]. Our private clinic was among several other working clinics in Baquba city, Diyala province, in the Northeast of Iraq. Independently, out of 596, 193 [6] COVID-19 positive Polymerase Chain Reaction (PCR) cases recorded in Iraq up to 31st December 2020, we received more than two thousand patients over the period from April to the end of December 2020. Our clinic had changed into a COVID-19 clinic.

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Like published worldwide data, the mortality and morbidity rates were highest at the old age group; however, many mortalities were reported in the younger age group. Several reasons backed behind such high rates among Iraqis, including the limited capacity of the public health institutions and the steady increase in the prevalence of COVID-19 infection. Many families were forced to provide medication and oxygen therapy (O2) to their patients at their expense, which constituted an additional burden on those with limited income. Covid-19 is typically a biopsychosocial disease [7]. Psychological difficulties and prolonged fatigue are seen in less than a third of our clinic patients. Depression, sleeping difficulties, and anxiety are seen after recovering in about a fifth of patients regardless of age but correlated with lung involvement severity.

Depending on our experience in managing the Covid-19 pandemic, patients presented with symptoms of an upper respiratory infection such as loss of smell and taste usually experience benign course compared to those presented with typical presentation such as high fever, shortness of breath, sore throat, cough, sneezing, runny nose, nasal congestion, sneezing, achy muscles, and headache. However, the more fatal and challenging situation when the infection progresses involves the lower respiratory system (airways and lungs). Symptoms may worsen, such as "severe productive cough, shortness of breath, chest tightness". We found that the pulmonary in situ vascular thrombosis is a significant cause of late after cure mortality, so we extended the course of anticoagulants Eliquis (apixaban) and Xarelto (rivaroxaban) up to 30 days to reduce the likelihood of blood clotting and systemic embolism. Moreover, less likely cerebrovascular accident (CVA) or peripheral arterial thrombosis have been seen, and there is no evidence of deep venous thrombosis (DVT) have noted. Late or long-term

Sequelae has been reported among patients with prolonged hypoxia (weeks or months); however, no long-term fibrosis is seen in tuberculosis patients (TB) [8]. After six months from recovery, one patient still has exertional dyspnea and needs supplemental oxygen therapy at night. Chest X-ray shows residual fibrotic lesions, suggesting the possibility of long-term sequences. However, some cases presented with gastroenteritis, however elevation in the liver enzymes' level is not uncommon, but less than four folds associated with epigastric pain and vomiting.

Additionally, when COVID-19 being a systemic infection, some patients presented with arthritis, rash, pericardial effusion, severe hepatitis, nephritis, orchitis, thrombocytopenia, and Urinary tract infection (UTI). We here confirm what other literature indicated [9] that COVID-19 is diabetogenic, especially with dexamethasone regardless the age. The risk of coronavirus infection doubles for diabetics, and at the same time, new cases of diabetes have been recorded and the emergence of severe complications in preexisting diabetes due to Coronavirus infection.

Private medical clinic protocol to treat COVID-19 patients

There is no proven and effective antiviral therapy nor an efficient vaccine for COVID-19 infection based on our knowledge. Moreover, antibiotics are never of any benefit in changing the course of illness. The most effective interventions are Actemra (Tocilizumab), the Interleukin-6 (IL-6) receptor antagonists, convalescent plasma, anticoagulant, dexamethasone in addition to oxygen (O2) therapy. The IL-6 has the potential of anti-cytokine storm ability by slowing down the systemic inflammatory response to viral infection in its early stages [10]. Table 1 shows the general protocol used to treat COVID-19 positive PCR cases. Most private clinics are concerned with conducting clinical and physical examination only, while the rest of the medications and therapies are taken from private pharmacies. Moreover, except for the PCR, and computed tomography (CT-scan) the patients depend on the private laboratories to perform the hematological, and the serological tests. However, several patients rely on private radiological clinics to confirm or exclude the COVID-19 via CT-scan when necessary.

Estimated cost to treat COVID-19 patients at private clinics

An average estimated cost was calculated for each COVID-19 case treated in private clinics (Table 1). The average cost for a patient treated from Coronavirus in a range of five to ten days is approximately (IQD 573,228) (equivalent to USD 477.69, exchange rate 1 US Dollar (USD)= Iraqi Dinar (IQD)1200 in November 2020). The cost is directly proportional to the period of treatment and the emergence of complications [11].

The patient who does not respond to simple protocol needs a more extended treatment period, such as continuous oxygen therapy for several weeks, or the need for further intervention, such as Actimera infusion (IL6 antagonist) when the IL6 is extremely high. In such cases, the total cost may rise to IQD 3,173,232 (equivalent to USD 2,644.36) when Meropenem injection and Actimera infusion used to treat the severe and complicated cases. Local governments in Iraq provide free of charge oxygen for COVID-19 patients, however, citizens must buy oxygen bottles on their expense. The cost of one empty oxygen bottle about IQD 20,000 (equivalent to USD 16.67) in the private sector. Actimera infusion (IL-6 antagonist) is a lifesaving in severe and deteriorated COVID-19 cases, however, considering absence of the government support the drug is costly. A10 ml of Actimera infusion may cost about IQD 2,250,000 (equivalent to USD 1875). The cost per doctor's visit ranged between IQD 15,000 to 25,000 (equivalent to USD 12.5 to 20.83). Nursing services for COVID-19 patients are essential to follow the treatment protocol at home. The cost per nurse's visit about IQD 5000 (equivalent to USD 4.16).

This study complaint of several limitations. First, the lack of a national drug pricing policy in Iraq, the diversity of drug sources, and the absence of quality control program allowed for a wide gap in treatment costs to emerge. Therefore, the cost of treatment may change dramatically when the protocol switching from Ceftriaxone injection to Meropenem injection or when switching from a lesser quality product to a high-specification product. Second, elderly patients with chronic diseases are more likely to have complications that require a more extended treatment period. Moreover, some services are provided by the state for free, such as PCR, and CT-scan, and conversely, only the CT-scan costs about IQD 50,000 (equivalent to USD 41.67) in the private sector. Third, all the information regarding cost prices is approximate, depending on the private pharmacies' pricing in Iraq. Fourth, the study did not include other incurred costs such as transportation costs, food, time, and the cost related to job absenteeism of patient; therefore, we cannot claim an economic evaluation. The need to reform the Iraqi health system has become an urgent necessity through the implementation of effective health economic policies, such as the adoption of universal health insurance (UHI). Moreover, technical, and clinical systems such as the Diagnosis Related Group (DRG) or Case-mix are preferable systems that precisely detect the allocated cost per service and patient cost estimation [11,12].

Conclusion

More than 90.0% of the confirmed positive PCR COVID-19 cases, which were undergone to management in our private clinic, made a full recovery at different times. However, very few real-second attacks have been recorded by new CT lesion after resolution and PCR positivity after becoming negative from the first attack. Treating COVID-19 patient in the private sector is expensive. There is a wide difference in the cost of treatment at the local level. The cost doubles with the length of treatment and the need for Actimera infusion (IL6 antagonist).We are dealing with a fierce enemy that arose in mysterious circumstances and had the ability to change and attack other times. Therefore, what we say today about the way of dealing with, and the treatment protocol may change completely tomorrow.

Abbreviation

COVID-19: Coronavirus; PCR: Polymerase Chain Reaction; CT-scan: Computed Tomography; CVA: Cerebrovascular Accident (CVA); DVT: Deep Venous Thrombosis; TB: Tuberculosis; UTI: Urinary Tract Infection; O2: Oxygen; IL-6: Interleukin-6; IQD: Iraqi Dinar; USD: United State Dollar

Table 1 An estimated cost to treat COVID-19 patient at a private clinic in Iraq

No.	Therapy	Indication	Dose given	Cost per item (IQD)	Duration	Total Cost (IQD)	Total cost (USD)
1	Paracetamol	Fever and aches	500mg X 3	750	Ten days	2,250	1.88
2	Metoclopramide injection	Nausea and vomiting	10 mg 1X 2	1,000	5 days	10,000	8.33
3	Vitamin D3(Cholecalciferol)	Supplementary	125mcg (50000 IU) X1	12,000	2-4 weeks	12,000	10.00
4	Intravenous fluid	Dehydration and or diminished feeding	N/S, GW5% (4 liters)	3,000	5 days	120, 000	100.00
5	Rivaroxaban	Thrombosis prophylaxis	5-10 mg X 1	55,000	30 days	55,000	45.83
6	O2 therapy	Hypoxia	On need	2,0000	On need	20,000	16.67
7	Dexamethasone injection	Hypoxia	6 mg/2m I.V.	3,000	Ten days	30,000	25.00
8	Antibiotics:						
8a	Ceftriaxone injection	Infection	1gram i.v. x 2	6,000	7 days	84,000	70.00
8b	Meropenem injection	Infection	1 gram i.v x 2	25,000	7 days	350,000	291.67
8c	Azithromycin (Zithromax)	Infection	500 mg x 1	5,000	6 Days	5,000	4.16
9	Actimera infusion (IL6 antiagonist)	Patient not responded, IL6 is very high	20mg/ml (10 ml x 1)	1,000,000-2,250,000	1-2 times (on need)	2,250,000	1,875.0
10	Labrotuary tests		Full investigation		Repeated On need	120,000	100.0
11	Chest x-ray		Anterior/ posterior	20,000	Twice	40,000	33.33
12	Fees paid to Doctor		Per visit	20,000	Twice	40,000	33.33
13	Fees paid to Nurses		Per visit	5,000	Five times	35,000	29.16

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We conducted the research following the Declaration of Helsinki. However, the world report needs no ethics committee approval.

Consent for publication
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Competing interest
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