

Management of the COVID-19 Pandemic: Experience of the Pneumology Department of the Mohamed VI University Hospital, Marrakech, Morocco

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Abstract

The epidemic of COVID-19 continues to grow in our country, even if the majority of forms are benign. Our lines of thought, which began at the start of the epidemic in our department, allow us to preserve access to care as much as possible by anticipating the risk of the virus spreading. Thanks to biweekly meetings, we continue to adapt to the epidemic evolution in our department, taking into account our material means.

Keywords: Epidemic; COVID-19; Organization; Patient

Introduction

The coronavirus disease 19 (COVID-19) pandemic started in China in November 2019 and has now spread to all continents. The World Health Organization (WHO) designated COVID-19 as a public health emergency of international concern on 30/01/2020 and considers it a pandemic since 11/03/2020 [1]. Morocco recorded the first case on 02 March 2020, the number of confirmed cases was 8533 and 211 deaths on 11/06/2020 [2].

Regarding the epidemiology, after infection with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), the incubation period varies from 5 to 14 days, but can be up to 22 days, while the doubling time of the number of cases is 6.4 days [3,4]. Although more than 80% of patients have a mild form of the disease, with an estimated mortality rate of 2 - 3%, the elderly or those with the associated illnesses are at special risk of developing serious forms [5].

Indeed, the characteristics of the virus ($R_0 > 2$, attack rate clearly higher than that of seasonal influenza in a naïve population) require the organization of a specially dedicated circuit for COVID patients [6].

Covid 19 reception unit: Pre-sorting, triage, sampling and organisation of hospitalisations

The emergency department is considered a high viral density area, a double circuit (Covid +/Covid -) was organised from the emergency department. All measures must be taken to rapidly transfer patients to the appropriate service and, depending on whether or not they have influenza, via the appropriate circuit. The patients regulated by the SAMU were admitted directly to the reception department.

The covid-19 circuit is a parallel circuit to that of suspected patients, which aims to limit the contact of suspected patients with other consultants, which begins with the triage of patients with signs of SARS 2 infection are referred to the COVID-19 intake unit for sampling and stratification of severity [6] hospital cabins in the emergency room are dedicated to patients for whom a medical evaluation and sampling (Figure 1) are necessary for their referral to a hospital department.



Figure 1: Reception and sampling box.

Transfer of patients to COVID services

The patient is transferred with a surgical mask on a wheelchair by a stretcher-bearer following a circuit (Corridor and elevator (Figure 2) dedicated only for covid patients).



Figure 2: Elevator dedicated to COVID patients.

Hospitalizing COVID-19 patients

Currently, the Errazi hospital has been transformed into a mobilized center. Initially, for COVID-19 case management with emergency receipt capabilities, continuous care and resuscitation while respecting the circuit reserved for the completion of radiological and biological assessments (Figure 3).



Figure 3: Samples reception.

During the epidemic phase, the mobilization of these healthcare institutions was essential for the diagnosis and treatment of stable and critical patients.

We present here our experience and the organization adopted within the pneumology department of Mohamed VI University Hospital, being the first department organized to receive patients with COVID.

Protection of medical/paramedic personnel

This is an important point, because in case of massive contamination of health personnel, it would be impossible to maintain continuity of care or ensure acceptable treatment times. The methods employed are:

- The systematic wearing of a surgical mask during the entire work period, to be changed every 4 hours, for all staff: doctors, nurses and secretaries, as recommended by the WHO.
- Use of personal protective equipment (PPE) (Figure 4) during medical procedures to protect against droplets from coughs, sneezes, or other body fluids from infected patients and from contaminated surfaces that could infect them. PPE may include gowns or coveralls (one-piece), gloves, FFP2 masks.
- Provide surface sanitizers (desk, computer keyboard, business phone).
- Remind all teams of hygiene to wash their hands regularly with soap or a hydroalcoholic solution.

- Always wear pyjamas under your dress to avoid contaminating personal clothing.



Figure 4: trim kit.

Organization of the wards (Figure 5)

Suspected or confirmed Covid patients were hospitalized in individual rooms containing all the necessary equipment with a table outside to collect meals, water.

The hospitalized patients had been monitored twice daily for general and respiratory status, in order to detect and prevent vital complications (mainly cardio-respiratory and thrombo-embolic), and to evaluate the functional consequences. A closer or longer follow-up was necessary, the frequency of which had to be adapted according to the patient’s evolution.

The transfer to the intensive care unit was performed based on the following criteria:

- Neurological disorders: Disorders of conscience.
- Polypnea; FR > or 30 cycles per min.
- Systolic BP < 90 mm Hg.
- Heart rate: > 120 beats/min.
- Oxygen saturation < 92% on 4 l/ min O₂.



Figure 5: Dedicated pulmonary department COVID.

Therapeutic management

The Ministry of Health has updated the protocol for the management of patients with Covid-19. First-line treatment for 10 days; in the absence of clinical improvement or absence of covid PCR negativity, this first-line treatment was prolonged for 5 additional days before considering switching to a second-line treatment.

The Ministry of Health in Morocco, in addition to preventive measures to limit the spread, instituted a scientific, technical advisory committee that adopted on March 21, 2020 recommendations for the management of confirmed positive patients. Protocols for prophylactic treatment of persons who have been in unprotected contact with positive patients, and curative treatment of positive patients have been developed, as well as adaptations.

In addition to the dosage and use guidelines proposed for treatment in vulnerable populations, this is an off-label indication for chloroquine/hydroxychloroquine in the treatment of SARS-COV2 infection, which requires special Pharmacovigilance monitoring (Table 1).

	Prophylactic protocol (HCQ)	
Contact persons	Hydroxychloroquine (Plaquenil® 200 mg): 200 mg twice a day for 2 days, then once a day for 5 days	
	First-line protocol	
Patients tested positive	Chloroquine (Nivaquine® 100 mg) 5 tablets twice a day for 10 days (1000 mg per day) Or Hydroxychloroquine (Plaquenil®200 mg) 1 tablet 3 times a day for 10 days (i.e. 600 mg per day).	Azithromycin 500 mg the first day then 250 mg from day 2 to day 7
In children	Chloroquine/Hydroxychloroquine 5 mg/kg/12h without exceeding 300 mg per intake for 5 days, up to 10 days for severe forms. Chloroquine tablet (100 mg) or half tablet hydroxychloroquine (200 mg) is to be crushed and mixed in 2 minutes in 10 ml of water (measured with a syringe) in a container to obtain a concentration of 10 mg/ml or 0.5 ml/kg. The dose to be administered according to the child's weight is taken by the syringe and the rest of the solution will be discarded after each administration.	Azithromycin: 10 mg /kg/d on the first day not to exceed 500 mg then 5 mg/kg/d with a maximum 300 mg for 5 days
In the patient hemodialysis	Chloroquine: 500 mg twice a day on the first day, then 250 mg twice a day on the second day. times a day for 9 days, or Hydroxychloroquine: 200 mg per day after each session of dialysis for 10 days	Azythromycin: 500 mg the first day then 250 mg/day for 6 days (after the dialysis sessions on dialysis days)

Table 1: First-line treatment protocols for patients infected with SARS VOC 2.

Initial assessment to be carried out

Before starting the first-line protocol, a thorough interrogation must be carried out to look for medical history, drug use, the above-mentioned risk factors, and contraindications. It is recommended to list precisely all concomitant medications taken by the patients to be treated. In addition, the check up’s mentioned in the protocol are necessary before, during and after the end of treatment for all patients infected with SARS COV 2 (Table 2).

Initial assessment	In process	After discontinuation of treatment
An initial ECG A CBC with platelets and ferritin One TP, one TCK An ionogram: control of kalemia A blood sugar level A liver and kidney check-up	Cardiac monitoring, especially in patients at risk: - An ECG at 4 o'clock - A daily ECG to check and detect any alteration of the corrected QT wave (QTc) - Regular monitoring of the CBC - Regular monitoring of blood sugar levels - An ionogram to control kalemia - An ophthalmological examination in patients with retinopathy	An ECG, A CBC An ionogram with kalemia A blood sugar level

Table 2: Initiation and follow-up of first-line treatment of patients infected with SARS COV 2.

Virological and serological follow-up

The cure of our patients was evoked only at the end of the 10 days of treatment, with a clinical improvement of at least 3 days and absence of radiological and biological signs of aggravation.

Days of care load	Tests to be performed		Objective	Declaration of the Healing
	Serology	Molecular		
J1	Yes	No	Follow-up of the seroconversion	
J9	No	1 st control	Control of the healing	If the 2 tests are negatives
J10	Yes	2 nd control		
J14	No	1st control	Control of the cure if the test at D9 or D10 is not negative	If the 2 tests are negatives
J15	Yes	2 nd control		
J24	If exit at D10	No	Follow-up of the seroconversion	
J29	If discharge at D15	No	Follow-up of the seroconversion	Increase in IgG - Decrease in IgM

Table 3: Molecular and serological follow-up of a confirmed case.

Discharge of patients

On discharge, the patient was transferred to a buffer facility for 14 days, during which time he or she would continue barrier measures and personal hygiene rules as well as bleach stool disinfection.

Conclusion

The objective of this article was to give our lines of thought, started from the beginning of the epidemic in our department with the measures of protection of the personnel and the patients which allowed us until now to contain the epidemic in our service.

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