

Therapeutic use and covid-19 in a pediatric population in Yaoundé

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Abstract

Introduction: The COVID-19 pandemic is an airborne or hand borne viral respiratory disease. Its treatment is not yet totally codified.

Objective: The aim of this study was to describe the therapeutic remedies of COVID-19 in a paediatric population in Yaoundé.

Materials and methods: A cross sectional descriptive study was conducted in Nkolndongo health district from January to May 2021 for a duration of 5 months. All patients aged 0 to 19 years, tested COVID-19 by RT-PCR and managed in the Nkolndongo health district were included. Results were analysed using IBM SPSS.23.0 software and data expressed as frequencies and percentages.

Results: This study revealed that among the 48 patients tested positive 100% have received drugs as instructed by the national protocol 2020. The molecules involved included: introychloroquine, azithromycin, zinc and vitamin C. At the same time, 39.6% have received paracetamol and 4.16% have received oxygen. In addition of the national protocol drugs 43.75% have used *Zingiber officinale* and *Citrus limon*, 33.33% have used *Cinchona officinalis*, 25% have consumed *Allium sativum*, 22.92% *Allium cepa*, 8.33% honey, 6.25% *Moringa oleifera* and 10.41% mint crystals.

Conclusion: The treatment was according to the national COVID-19 protocol 2020. A high proportion of children has used traditional pharmacopoeia.

Keywords: Treatment; Therapeutic Remedies; Covid-19; Pediatric

1. Introduction

Emerging in early 2020, SARS-CoV2 (Covid-19) infection is a viral respiratory disease with airborne or manu-port transmission that has disrupted the healthcare system in both low-income and developed countries(1)(2). Asymptomatic infections are not uncommon; clinical signs most often combine general and respiratory signs; they are polymorphic and non-specific. It is characterized by a severe acute respiratory distress syndrome and has many clinical

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forms in both adults and children(3). It is a cosmopolitan pathology that represents a worldwide public health emergency(3). Since its appearance to date, its treatment to date non-specific (symptomatic) or specific (curative) experimental - not yet fully codified. In this context, in addition to the global attempt to find an effective treatment protocol, the anxiety and fear of the infection, pressure from families and patients, the desperate need to do something, especially if the patient is severely affected as well as the impact of social, it is common for people to turn to unproven treatments against Covid-19 (WHO)(4). The WHO also, in a global drive to find an effective treatment for SARS-CoV2, had early on encouraged countries to use traditional medicine based on scientific evidence. Thus, it is not uncommon to see academics collaborating with traditional practitioners to test solutions from traditional medicine(5). Other countries such as Mali and Cameroon find in this approach that in addition to the opportunity of valorization of the traditional pharmacopoeia, to strengthen the fight against Covid-19(6)(7). This article describes the therapeutic use of Covid-19 in a pediatric population in the city of Yaoundé.

2. Methodology

2.1. Type, duration and location of study

A descriptive cross-sectional study was conducted in the health district of Nkolndongo. This health district is located in the city of Yaoundé in Cameroon. It includes a District Hospital with pediatric and intensive care units in which competent general practitioners and specialists provide capabilities in different areas. The hospital aims to provide quality care, serve as an educational resource and promote research. In addition, other health facilities are located here.

2.2. Study duration/period

The study covered a ten-month period from March to December 2020. The study duration was from January to May 2021, or 5 months.

2.3. Study population

All records of patients aged 0-19 years who tested positive for COVID-19 by RT-PCR and were managed in the Nkolndongo health district were included in our study. Records with inadequate information on therapeutic management were excluded.

2.4. Data collection

We examined the files corresponding to the selection criteria in the archiving services of the health facilities of the Nkolndongo Health District after obtaining administrative authorizations. The data collected were recorded on a technical form that had been filled out and validated in advance, with a coding system that guaranteed the anonymity of the participants.

2.5. Study variables

They were constituted by sociodemographic data (age, sex), the medicinal treatment and the various therapeutic recourses used. All the products of the traditional pharmacopoeia used were listed, they were *Mentha piperita* (commonly called mint), *Moringa oleifera* (commonly called moringa), *Apis mellifera* (commonly called honey), *Allium cepa* (commonly known as onion), *Zingiber officinale* (commonly known as ginger), *Citrus limon* (commonly known as lemon), *Cinchona officinalis* (commonly known as ikouk or cinchona) and *Allium sativum* (commonly known as garlic).

2.6. Statistical analysis

The collected data were analyzed using Epi-info TM version 7 .2 software. Categorical variables were presented as frequency and percentage. Representations of these variables were made in the form of tables and figures.

2.7. Ethical and Administrative Considerations

All research studies involving human subjects require the acquisition of a research ethics clearance, which we obtained from the institutional research committee of the Faculty of Medicine and Biomedical Sciences. On the administrative level, each health facility gave its authorization for the study of the files. The confidentiality of the data collected was scrupulously respected.

3. Results

3.1. Prevalence of COVID-19 and sociodemographic characteristics of confirmed cases

Of 154 suspected pediatric cases, 48 (31.17%) tested positive (Table 1). Table 2 shows the distribution of the sample by sex and age group. There were almost as many boys as girls: 25 (52.08%) and 23 (47.92%) respectively. The age ranged from 0 to 18 years with a mean of 10.89 years and a standard deviation of 5.04. Twenty-three children (47.92%) were at least 12 years old and 25 children (52.08%) were less than 12 years old (Table 1).

Table 1 List of administered molecules

Variables	Modalities	Number (n) N=48	Percentage (%)
Gender	Male	25	52.08
	Female	23	47.92
Age range	[0-3[	5	10.42
	[3-6[	6	12.50
	[6-9[	5	10.42
	[9-12[	9	18.75
	[12-15[	10	20.83
	[15-18[	13	27.08

All patients received the drugs as per the national protocol (Modern Medicine) 2020 (100%). The molecules involved were: Hydroxychloroquine, Azythromycin, Zinc and Vitamin C. 11 patients 19 (39.6%) received paracetamol.

Table 2 List of administered molecules

Variables(n) N=48	Modalities	Number	Percentage (%)
Modern medicine	Hydroxychloroquine	48	100
	Azythromycin	48	100
	Zinc	48	100
	Vitamin C	48	100
	Paracetamol	19	39.58
	Oxygen therapy	2	4.17
Traditional Pharmacopoeia	<i>Zingiber officinale</i>	21	77.78
	<i>Citrus limon</i>	21	77.78
	<i>Cinchona officinalis</i>	16	59.26
	<i>Allium sativum</i>	12	44.44
	<i>Allium cepa</i>	11	40.74
	Honey	4	14.81
	<i>Moringa oleifera</i>	3	11.11
Mint Crystals	5	18.52	

In addition to the national protocol drugs, 21 (43.75%) patients consumed *Zingiber officinale* (ginger) and *Citrus limon* (lemon), 16 (33.33%) *Cinchona officinalis* (ikouk), 12 (25%) *Allium sativum* (garlic), 11 (22.92%) *Allium cepa* (onion), 4 (8.33%) honey, 3 (6.25%) *Moringa oleifera* (moringa) and 5 (10.41%) mint crystals (Table 2).

In total, 21 individuals (43.75%) received only the molecules of the national protocol; while 27 (56.25%) used the traditional pharmacopoeia in addition to the molecules of the national protocol (Figure 1).

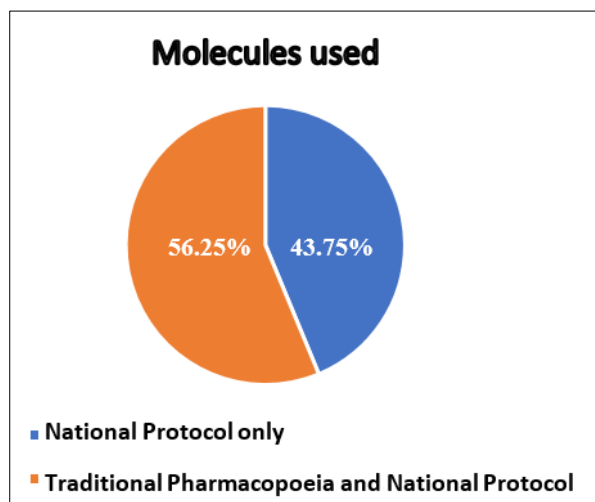


Figure 1 Proportion of individuals according to the type of protocol used

4. Discussion

In our study, all sick children received the treatment recommended by the Cameroonian national protocol. The molecules mainly involved were: hydroxychloroquine, azythromycin, zinc and vitamin C. In the African and Canadian series, it was reported that patients received mainly hydroxychloroquine and azythromycin. In addition to these molecules, antiretroviral drugs were also administered to Canadian patients (Remdisivir 17% Tocilizamab 10%) (8)(9). Despite the absence of antiretroviral drugs in their management, all our patients recovered their health. The traditional medicines consumed by the sick children were mainly: *Zingiber officinale* [ginger] (43.75%) is an immune system stimulant with antiallergic and antipyretic properties, *Citrus limon* [lemon] (43.75%) has antispasmodic and antivermifuge properties also used to relieve nausea and motion sickness, *Cinchona officinalis* [ikouk] (33.33%) is a powerful febrifuge, it helps to relieve flu symptoms, *Allium sativum* [Garlic] (25%) has bactericidal and fungicidal properties, *Allium cepa* [Onion] (22.92%) is a hypolipidemic, anti-histamine and anti-allergic effective against insect bites as well as wounds, honey (8.33%) antibacterial, antioxidant, anti-inflammatory, and antiseptic, *Moringa oleifera* [Moringa] (6.25%) antitumor, anti-inflammatory and antibacterial but they would also have neuroprotective properties to improve the functioning of the brain, the Mint crystals (10.42%) effective to clear the airways in case of sinusitis, rhinitis and bronchitis. Peppermint facilitates digestion: thanks to the action of its phenolic compounds, mint relieves digestive spasms and stimulates bile secretions (10)(11)(12)(13)(14)(15)(16)(17). More than half of the patients (56.25%) used the traditional pharmacopoeia in addition to the molecules of the national protocol and 43.75% of the patients received only the molecules of the national protocol. These results are in line with the therapeutic itineraries in Cameroon and the Democratic Republic of Congo, which described that the majority of these populations used traditional pharmacopoeia to treat themselves (18)(19).

In China, the therapeutic approach to the treatment of Covid-19 is based more on the substances than on the entire use of the plant. The molecules used are:

- Colchicine (Alkaloid) from Autumn Colchicum (*Colchicum autumnale*) Anti-inflammatory, anti free radical (Montealegre-Gómez et al. 2020; Schlesinger et al., 2020). It is used against gout (vidal). It would play a role in the replication of SARS-CoV-2. The use of 0.5 mg of colchicine per day during the early stage of infection (phase 1) of COVID-19 (Vitiello et al.);
- Quercetin: from fruits, leaves, seeds and grains (Li et al. 2016), it has anti-inflammatory, antioxidant, antiviral and immunoprotective (Uchide and Toyoda, 2011; Colunga Biancatelli et al. 2020) however, remarkable results have not been published so far;

- Lianhua Qingwen: it is an inhibitor of virus replication, inhibitor of pro-inflammatory cytokines release with the property of preventing virus entry into the cell as well as its recombination by binding with Mpro pretease and ACE2 protein (Li L.-C. et al. 2020; Ling et al. 2020);
- Toujie Quwen: Antioxidant, antiviral and anti-inflammatory, modulator of the immune system that plays a primary protective role in the lungs through some possible COVID-19 bio targets (Huang J. et al., 2020).
- Qingfei Cough Fuzheng: its probable mechanism is up-regulation of antiviral factors and down-regulation of pro-inflammatory factors (Ding et al. 2020)
- Studies suggest that using this recipe in conjunction with Western medicine was more effective in treating COVID-19 than using Western medicine alone.

The observation is that unlike in China, the use of plants is done in their entirety rather than the extraction of the substance suspected to have active properties on the disease. It would be appropriate to encourage research to go towards the extraction and isolation of the active elements of the plant to better understand their properties.

5. Conclusion

At the end of our study, it appears that the treatments used respected the national guidelines of 2020 and included Hydroxychloroquine, Azythromycin, zinc and vitamin C. Complementary therapeutic remedies consisted of products from the traditional pharmacopoeia, mainly *Zingiber officinale* (ginger), *Cinchona officinalis* (Ikkouk), and *Citrus limon*.

For a better phyto-therapeutic efficiency, it is necessary to go more towards the consumption of substances extracted from plants because the whole use of the plant decreases its efficiency because the active subsistence is consumed with other non-active elements requiring the consumption of a big quantity to have the sufficient therapeutic dose.

Compliance with ethical standards

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Disclosure of conflict of interest

The authors declare that they have no conflicts of interest.

Authors' contributions

Haamit ABBA-KABIR H. conceived the study and wrote the manuscript. Claude-Audrey MEGUIEZE collected the data. Eric NSEME ETOUCKEY and Esther VOUNDI VOUNDI carried out the statistical analysis. Carlin NTOUKEM MBAKOB proceeded to the critical reading of the manuscript. Paul KOKI NDOMBO proofread the manuscript. All authors have given their approval for publication.

Statement of ethical approval

All research studies involving human subjects require the acquisition of a research ethics clearance, which we obtained from the institutional research committee of the Faculty of Medicine and Biomedical Sciences.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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