

Epidemiologic and clinical characteristics in patients with COVID-19 in a General Hospital in Tabasco, Mexico

Características epidemiológicas y clínicas en pacientes con COVID-19 en un hospital general en Tabasco, México

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Summary

Objective: To describe the epidemiological and clinical characteristics at admission of patients hospitalized with Covid-19, in a General Hospital in Tabasco, Mexico. **Methods:** Cross-sectional analytic study conducted in the Medical Center of the Social Security of Tabasco State (ISSET) “MD. Julián A. Manzur Ocaña”, in Tabasco, Mexico; from June 1st to July 3, 2020 in diagnostic modules with packages of suspected diagnostic or confirmed patients with SARS-CoV-2. **Results:** It was obtained a sample of 140 positive cases of SARS-CoV-2, the 51.42% corresponded to men. The main symptoms were dyspnea, dry cough and fever. It was observed a greater increase on inflammation and thrombotic factors in males. The treatment consisted of antipyretic, antiplatelet agents, antimicrobial and steroids. The supplementary oxygen requirement was similar in women and men; however, the oxygen saturation was higher in women. **Conclusion:** The rate of 140 positive cases of COVID-19, with symptomatology property of the disease. With inflammatory and thrombotic parameters increase. The treatment was symptomatic with supplementary oxygen.

Keywords: COVID-19; SARS-CoV-2; Epidemiology; Hospitalization; Incidence

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Resumen

Objetivo: describir las características epidemiológicas y clínicas al ingreso de pacientes hospitalizados con diagnóstico de COVID-19, en un hospital general en Tabasco, México. **Métodos:** estudio transversal analítico realizado en el Centro Médico del Instituto de Seguridad Social del Estado de Tabasco (ISSET) “Dr. Julián A. Manzur Ocaña”, en Tabasco, México; del 1 de junio al 31 de julio del 2020, en los módulos de atención de pacientes con diagnóstico sospechosos o confirmados con SARS-CoV-2. **Resultados:** se obtuvo una muestra de 140 casos positivos a SARS-CoV-2, 51.42% pertenecía al sexo masculino. Los principales síntomas fueron disnea, tos seca y fiebre. Se observó un mayor incremento de factores inflamatorios y trombóticos en hombres. El tratamiento consistió en antipiréticos, antiagregantes plaquetarios, antimicrobianos y esteroides. El requerimiento de oxígeno suplementario fue similar en mujeres y hombres, sin embargo, la saturación de oxígeno fue mayor en mujeres. **Conclusión:** la frecuencia de 140 casos positivos a COVID-19, con sintomatología característica de la enfermedad. Con incremento de parámetros inflamatorios y trombóticos. El tratamiento fue sintomático más oxígeno suplementario.

Palabras clave: COVID-19, SARS-CoV-2, epidemiología, hospitalización, incidencia

Introduction

At the beginning of December of 2019, in the city of Wuhan, the provincial capital of Hubei, China, were notified pneumonic cases of unknown etiology in fisherman, workers and people who lived near a local seafood market, characterized

for the sale of live animals as, bats, toads, snakes, birds, marmots and rabbits.^{1,2} on the first stages of pneumonia the patients developed severe symptoms of acute respiratory infection, acute respiratory distress syndrome and other serious complications.³ The first fifty days were reported more than seventy thousand infected cases and thousands of deaths related with this epidemy.⁴

Searching for the etiologic agent in the Center of Infectious Diseases of the country, it was found a new virus that was named coronavirus Wuhan o novel of 2019 (2019-nCov) by Chinese researchers. The International Committee on Taxonomy of Viruses (ICTV) named the virus as s 8S-CoV-2 and the disease as COLD-19 (coronavirus disease 2019).^{5,6} The World Health Organization (WHO) reported, until August 23 of 2020, a cumulative of 23 million cases and eighty hundred thousand deaths.⁷

Different modes of transmission of have been described SARS-CoV-2, including: transmission person to person, through tiny droplets or microdroplets of Flügge; transmission by contact, contact with contaminated surfaces before touching the face; transmission by sprays, may occur when respiratory droplets are mixed with the air, creating sprays and are inhaled.⁸ Furthermore, there has been noted that the digestive system is a potential transmission path for COVID-19 infection.^{9,10} Nonetheless, there is not enough evidence to distinguish it as a transmission path.

Different studies describe an incubation period of COVID-19 of 5 days on average, it has been reported the occurrence of symptoms the first two days after exposure;¹¹ the most common signs and symptoms are fever, dry cough, sputum and fatigue.¹²⁻¹⁴

Different risk factors that increase mortality rate in adults have been identified, as advanced age, D-dimer plasmatic levels higher than 1 µg/ml and a high score in the SOFA scale (Sepsis related Organ Failure Assessment), as well as high levels of interleukin 6 (IL-6), cardiac troponin 1 of high sensitivity, lactate dehydrogenase y lymphopenia.¹⁵⁻¹⁶

In other hand, Charlson index predict life expectancy on ten years and nowadays has been use as a mortality risk predictor in hospitalized patients with COVID-19, identifying comorbidities that are bad prognosis for hospitalized patients.¹⁶

The diagnostic to confirm clinically the COVID-19 is made through sampling nasopharyngeal swabs to make the real time reverse transcription-polymerase chain reaction (RT-PCR).¹⁷⁻¹⁹ The immunological tests to detect immunoglobulin M (IgM) and immunoglobulin G (IgG) are an alternative method to rapid and sensible diagnosis of SARS-CoV-2, because it has been seen that the IgM can be detected on the first three to six days of infection, whereas the IgG can be detected from the eighth day of infection;²⁰⁻²² although, it has shown a high sensibility (88.6%) and specificity (90.63%) to the diagnosis.^{22,23} Image techniques suggest an alternative diagnostic in patients with COVID-19, specially in cases with RT-PCR test access, limit or existing clinical radiological suspect at stake of a false negative of the molecular test.²⁴⁻²⁷

Identify the characteristic that impact on the incidence, prevalence and development of COVID-19 is essential to understand better the behavior of this disease. Against this background, the objective of the current study was to describe the epidemiological and

clinical characteristics at admission of hospitalized patients with COVID-19, in a General Hospital in Tabasco, Mexico.

Methods

It was conducted a cross-sectional analytic study in the Medical Center of the Social Security of Tabasco State (ISSET) “MD. Julián A. Manzur Ocaña”, in Tabasco, Mexico, from June 1st to July 31st of 2020. The population was integrated by 318 hospitalized patients in the in the care packages of suspect diagnostic or confirmed patients with SARS-CoV-2 through RT-PCR; they were included advanced age patients, indiscriminate gender, beneficiaries of the institution and people who was accepted to be admitted under hospitalization. The patients who had not complete medical history information and clinical laboratory test results, patients with volunteer departure, pregnant patients, gravitational admission patients and patients who diagnostic with the disease posteriori were excluded.

The COVID-19 diagnostic was done in all of the nasopharyngeal tests by RT-PCR. For its execution, the study had the Teaching, Investigation, Capacitation and Ethic Committee of the Institution approval.

The data collection was carried out through the Sistema Integral de Prestaciones Médicas (SIPEM) from ISSET. Sociodemographic variables, anthropometric information, comorbidities, health history, therapeutics and laboratory studies in the patient record at admission were collected.

Variables were indicated as average \pm standard deviation and proportions (%) of count. The sociodemographic information and comorbidities were compared through χ^2 , considering stati-

cal significance $p < 0.05$, meanwhile the laboratory studies were compared by the t test of Student, considering statistical significance $p < 0.05$. All the data was analyzed by SPSS v. 23 and GraphPad Prism 6.

Results

It was obtained a sample of 140 positive cases of SARS-CoV-2, with 51.42% men, average age was 59 years, average weight of 80 kg and Body Mass Index (BMI) of 30.5 kg/m^2 ; the main comorbidities

detected were diabetes mellitus type 2 (DM2) and arterial hypertension (AHT), see table 1.

The main symptoms and signs at admission were dyspnea (68.57%), dry cough (52.14%), fever (47.14%) and myalgia (28.57%), see table 2. At associating the shown symptoms and signs, it was observed that the 39.28% exhibited association with dyspnea and cough, 20% dyspnea, cough and fever, and 9.28% exhibited association with four symptoms and signs, see figure 1.

Table 1. Sociodemographic Information

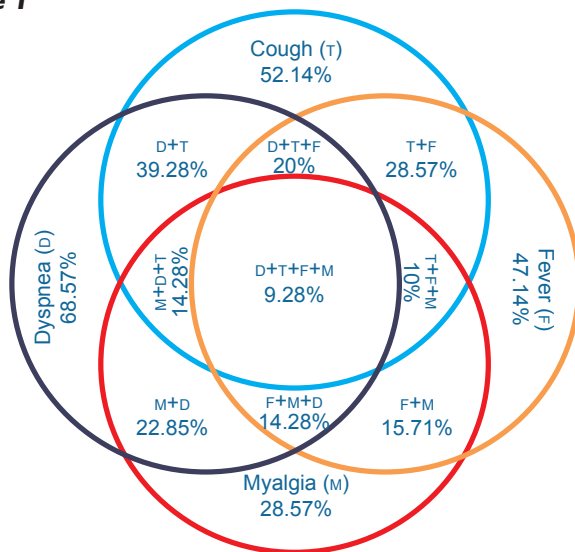
	Women	Men	P
Positive Cases	68 (48.57)	72 (51.42)	0.891
Age (years), M (\pm)	59 (± 10.99)	59 (± 12.59)	0.574
Weight (Kg), M (\pm)	76.21 (± 14.81)	85.04 (13.67)	0.0011*
Height (m), M (\pm)	1.56 (± 0.06)	1.67 (± 0.06)	<0.0001*
BMI (kg/m^2), M (\pm)	30.72 (± 5.95)	30.30 (± 4.28)	0.7535
Comorbidities			
Diabetes type 2, n (%)	31 (21.52)	30 (20.83)	0.297
AHT, n (%)	33 (22.92)	26 (18.06)	0.255

M: average; *: statistical significance $p < 0.05$

Table 2. Signs and symptoms presented at admission of positive patients of SARS-CoV-2

Total	Women (%)	Men (%)	χ^2	P
Dyspnea	33.33	33.33	2.22	0.136
Dry cough	25	25.69	1.374	0.241
Fever	22.22	23.61	1.065	0.302
Myalgia	15.28	12.5	2.848	0.091
Arthralgia	13.89	13.19	3.421	0.064
Cephalalgia	15.28	8.33	1.126	0.288
Odynophagia	10.42	9.03	0.044	0.832
Asthenia	7.64	6.25	2.716	0.099
Diarrhea	6.25	5.56	1.195	0.274
Thoracic pain	5.56	5.56	2.55	0.11
Anosmia	3.47	5.56	2.026	0.154
Ageusia	2.78	5.56	1.714	0.19
Rinorrea	2.08	3.47	0.685	0.407
Adinamia	2.78	2.08	3.733	0.053

Figure 1



In relation with biochemical parameters reported, it was observed a higher increase of plasmatic leucocytes (12.02 ± 0.67), lactate dehydrogenase (508.8 ± 33.64), fibrinogen (709.9 ± 28.73), ferritin ($113\ 255.00 \pm 16\ 087.00$), dimer D (6094.00 ± 1786.00), procalcitonin (0.73 ± 0.15), interleukin 6 (IL-6) (91.02 ± 39.57) and C reactive Protein (CRP) (40.78 ± 7.70) in men. In the case of women, erythrocyte sedimentation rate (ESR) (35.46 ± 1.86) and the blood gases were greater, carbon dioxide partial pressure (PCO_2) (35.98 ± 2.05), oxygen partial pressure (PO_2), (98.15 ± 8.93) and oxygen saturation ($Sat\ O_2$) (93.83 ± 1.84). It was not determined statistical difference between both genders, see table 3.

Regarding the treatment, the most managed medications were enoxaparin, salmeterol, dexamethasone, ceftriaxone, azithromycin, paracetamol, omeprazole and hydroxychloroquine. Also, 65.27% needed oxygen mask, 17.36%, invasive mechanical ventilation (IMV) y 4.1 6%, nasal prongs, see table 4.

Discussion

SARS-CoV-2 disease is an emerging condition which threat the preparation conditions in different health areas, as epidemiological area, clinical therapeutic area, prevention, rehabilitation and biosecurity.

During the process to deal with the pandemic, its characteristics have been described from the molecular, clinical, epidemiologic and preventive, to the rehabilitation. It has been a world collaborative work without precedent.

The number of cases of women and male were similar, however, there are some hypotheses focus on feminine gender protection. Due to Chromosome X and sexual hormones in women are considered to add a protection factor to regulate innate and adaptive immunity.^{28,29} Also, it has been associated that male androgens may play a role in the pathogeny of the disease, because it can facilitate entry the virus into the cells at promoting the expression of a serine protease key.³⁰

The main symptoms described are fever and dry cough, by varying the presence and order of the third symptom, some authors report it as dyspnea, thoracic pain or myalgia; on this study the main symptoms were dyspnea, dry cough and fever: and in less cases ageusia, anosmia, and thoracic pain, this last one a gravity indicative.^{1,28,29,31,32} The presence of comorbidities, as diabetes, hypertension, heart diseases and respiratory diseases, are associated with an increase on the mortality rate; it was observed on this study that the main comorbidities were diabetes and hypertension.^{31,32}

In other hand, the inflammatory response has an important role in pathological and infectious process. In patients with COVID-19, the inflammatory cells are correlated with severity of the disease. On this study, it was observed an increase of leukocytes and neutrophils, in the ESR and PCR, moreover D dimer, fibrinogen, procalcitonin and IL-6. It has been reported that patients with increase on IL-6, PCR and procalcitonin have a highly risk to develop a serious disease.³³

The main characteristic of COVID-19 is the respiratory damage, however, it is suggested to provoke a coagulation disorder, different from disseminated intravascular coagulation characterized by the increase of ESR, D dimer and fibrinogen.^{32,33} On a study of corpse, deceased by COVID-19, the autopsies revealed the small thrombus formation in the lung parenchymal associated with an alveolar hemorrhage, characterized by the increase of D dimer.³⁴ On this study it was observed a considerable increase of ferritin plasmatic concentrations, D dimer and fibrinogen in 70% of positive cases.

Table 3. Laboratory results at admission of positive patients of SARS-CoV-2

	Total, M (±)	Women, M (±)	Men, M (±)	p
Hemoglobin	13.08 ±0.15	12.73±0.19	13.44±0.23	0.0297*
Hematocrit	39.02 ±0.45	37.98±0.57	40.08±0.69	0.0294*
Leukocytes	11.43 ±0.45	10.84±0.59	12.02±0.67	0.1598
Platelet	298.80 ±10.20	318.50±13.37	278.80±15.12	0.0553
Glucose	176.20±9.65	191.5±15.65	160.7±10.98	0.1241
Creatinine	0.89±0.06	0.71±0.05	1.07±0.10	0.0047*
Albumin	3.43±0.04	3.51±0.06	3.34±0.05	0.0387*
Triglyceride	189.20±9.34	197.6±12.09	178.9±14.60	0.5366
B. direct	0.26±0.02	0.20±0.02	0.33±0.03	0.0053*
B. indirect	0.45±0.02	0.35±0.02	0.55±0.03	<0.0001*
ALT	50.87±3.39	52.67±5.62	49.07±3.85	0.6044
AST	54.85±2.72	53.55±3.70	56.14±4.02	0.5812
FA	122.60±4.35	126.9±6.18	118.4±6.14	0.3359
DHL	471.50±21.28	433.50±25.25	508.8±33.64	0.067
Fibrinogen	696.70±18.50	683.2±23.34	709.9±28.73	0.4293
ESR	31.74±1.48	35.46±1.86	27.79±2.21	0.0213*
PCR	38.60±6.52	36.36±10.56	40.78±7.70	0.7569
Dimer D	4,860.00±1,198.00	3578.00±1,588.00	6094.00±1,786.00	0.405
Ferritin	93,597.00±11,849.00	75319.00±17,076.00	113255.00±16,087.00	0.1239
Procalcitonin	0.65±0.18	0.56±0.33	0.73±0.15	0.6573
IL-6	68.25±24.22	40.92±23.16	91.02±39.57	0.4416
PCO ₂	35.46±1.56	35.98±2.05	34.75±2.46	0.3308
PO ₂	95.27±6.81	98.15±8.93	91.59±10.75	0.6603
PH	7.35±0.01	7.36±0.01	7.35±0.02	0.9787
Lactate	2.33±0.20	2.12±0.27	2.62±0.28	0.0385*
HCO ₃	20.46±0.90	20.94±1.19	19.79±1.39	0.2433
Sat O ₂	93.60±1.20	93.83±1.84	93.26±1.34	0.1862

M: average; B: bilirubin; ALT: alanine aminotransferase; AST: aspartate aminotransferase; FA: alkaline phosphatase; *: statistical significance, p<0.05.

Table 4. Oxygen requirement and IMV

	Female	Male	χ ²	p
IMV	12 (8.33%)	13 (9.02%)	1.128	0.288
Reservoir mask	48 (33.33%)	46 (31.94%)	1.113	0.286
Nasal prongs	2 (1.38%)	4 (2.77%)		

IMV, invasive mechanical ventilation; χ²

Nowadays, there is not a pharmacological therapy established for COVID-19 treatment, because of this the treatment is symptomatic; in some cases, the antimicrobial use is prescribed in some bacterial contaminant infections. Oxygen supplementation is indicated on respiratory distress and hypoxemia cases. On this study, 86.80% of the cases required conventional mask supplementation and just a 17% required of IMV.^{35, 36}

The limitations on this study include patients with no clinical history available, for this reason the information could not be correlated with the symptoms or disease course and the number of samples were low. It is justified a higher research of patients with temporary information and detail symptoms and samples collected consecutively on different sites.

Conclusions

It was reported a frequency of 140 positive cases of COVID-19, with characterized symptomatology of dyspnea, cough and fever. As well as the increase of inflammatory parameter (ESR, CPR and IL-6) and thrombotic factors, especially D dimer. The treatment was symptomatic, and the main antimicrobial supply was ceftriaxone, a cephalosporin of third generation, and hydroxychloroquine, however, its use on COVID-19 treatment is not justified. Moreover, the oxygen requirement was similar in both groups, but saturation in women was higher.

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Conflict of interests

The authors declare that there is no conflict of interest with planning, executing and copywriting of this research article. For what is considered its submission to review and publication as favorable.

References

- Centers for disease control and prevention. 2019 novel coronavirus, wuhan, china. Information for health care professionals [Internet]. [Cited 2020 Mar 24] Available on: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/index.html>
- Chen N, Zhou M, Dong X, Qu J, Gong F, Han Y, et al. Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study. *Lancet*. 2020; 395(10223):507-513.
- Wang C, Horby PW, Hayden FG, Gao GB. A novel coronavirus outbreak of global health concern. *Lancet*. 2020; 395(10223):470-473.
- Shereen MA, Khan S, Kazmi A, Bashir N, Siddique R. COVID-19 infection: Origin, transmission, and characteristics of human coronaviruses. *I Adv Res*. 2020;24:91-98.
- Huang C, Wang Y, Li X, Ren L, Zhao I, Hu Y, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *Lancet*. 2020; 395(10223):497-506.
- WHO. Novel Coronavirus-China. [Internet]. [Cited 2020 Mar 24] Available in: <http://www.who.int/csr/don/12-january-2020-novel-coronavirus-china/en/>
- WHO. Coronavirus disease (COVID-19) Weekly Epidemiological Update. [Internet]. [Cited 2020 Mar 24] Available in: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-repoHs>
- Adhikari SP; Meng S, Wu YJ, Mao YP, Ye RX, Wang QZ, et al. Epidemiology, causes, clinical manifestation and diagnosis, prevention and control of coronavirus disease (COVID-19) during the early outbreak period: a scoping review. *Infect Dis Poverty*. 2020;9(1):29.
- Zhang H, Kang Z, Gong H, Xu D, Wang I, Li Z, et al. The digestive system is a potential route of 2019-nCov infection: a bioinformatics analysis based on single-cell transcriptomes. *bioRxiv*. 2020
- Zhang H, Kang Z, Gong H, Xu D, Wang J, Li Z, et al. Digestive system is a potential route off RJ COVID-19: an analysis of single-cell coexpression pattern of key proteins in viral entry process. *Gut*. 2020;69(6):1010-8.
- Lauer SA, Grantz KH, Bi Q, Jones FK, Zheng Q, Meredith HR, et al. The Incubation Period of Coronavirus Disease 2019 (COVID-19) From Publicly Reported Confirmed Cases: Estimation and Application. *Ann Intern Med*. 2020;172(9):577-582.
- Zhou F, Yu T, Du R, Fan G, Liu Y, Liu Z, et al. C1 in ical course and rislc factors for mortality of adult in patients with COVID-19 in Wuhan, China: a retrospective cohort study. *Lancet*. 2020;395(10229):10541062.
- Giacomelli A, Pezzati L, Conti F, Bernacchia D, Siano M, Oreni L, Rusconi S, et al. Self-reported Olfactory and Taste Disorders in Patients with Severe Acute Respiratory Coronavirus 2 Infection: A Crosssectional Study. *Clin Infect Dis*. 2020;71(15):889-890.
- Weiss P, Murdoch DR. Clinical course and mortality risk of severe COVID-19. *Lancet*. 2020 Mar 28;395(10229):1014-1015.
- Ihle-Hansen H, Berge T, Tveita A, Rmning EJ, EinB PE, Andersen EL, et al. COVID19: Symptoms, course of illness and use of clinicals coring systems for the first 42 patients admitted to a Norwegian local hospital. *Tidsskr Nor Laegeforen*. 2020;140(7).
- Christensen DM, Strange JE, Gislason G, Torp-Pedersen C, Gerds T, Fosbal E, Phelps M. Charlson Comorbidity Index Score and Risk of Se vere Outcome and Death in Danish COVID19 Patients. *J Gen Intern Med*. 2020;35(9):2801-2803.
- Pérez Abreu Manuel Ramón, Gómez Tejeda Cairo Jesús, Dieguez Guach Ronny Alejandro. Características clínico-epidemiológicas de la COVID-19. *Rev haban cienc méd*. 2020;19(2):e3254.
- Wang W, Xu Y, Gao R, Lu R, Han K, Wu G, Tan W. Detection of SARS-CoV-2 in Different Types of Clinical Specimens. *JAMA*. 2020;323(18):1843-1844.
- Rodríguez-Morales AJ, Cardona-Ospina JA, Gutiérrez-Ocampo E, Villamizar-Pefia R, HolguinRivera Y, Escalera-Antezana IP, et al. Clinical, laboratory and imaging features of COVID-19: A systematic review and meta-analysis. *Travel Med Infect Dis*. 2020;34:101623.
- Xie J, Ding C, Li J, Wang Y, Guo H, Lu Z, et al. Characteristics of patients with coronavirus disease (COVID-19) confirmed using an IgM-IgG antibody test. *J Med Virol*. 2020;92(10):2004-2010.
- Zeng F, Dai C, Cai P, Wang J, Xu L, Li J, et al. A comparison study of SARS-CoV-2 IgG antibody between male and female COVID-19 patients: A possible reason underlying different outcome between sex. *J Med Virol*. 2020;92(10):2050-2054.
- Li Z, Yi Y, Luo X, Xiong N, Liu Y, Di S, et al. Development and clinical application of a rapid IgMIgG combined antibody test for SARS-CoV-2 infection diagnosis. *J Med Virol*. 2020;92(9):1518-1524
- Pisanic N, Randad Pt , Kruczynski K, Manabe YC, Thomas DL, Pekosz A, et al. COVID-19 Serology at Population Scale: SARS-CoV-2-Specific Antibody Responses in Saliva. *I Clin Microbiol*. 2020;59(1):e02204-20.
- SERAM. Guía básica de indicaciones de pruebas de imagen en la infección COVID-19. [Internet]. [Cited 2020 Mar 24] available in: https://seram.es/images/site/Recomendaciones_imagen_SERAM_COVID_19.pdf
- Ai T, Yang Z, Hou H, Zhan C, Chen C, Lv W, Tao Q, et al. Correlation of Chest CT and RT-PCR Testing for Coronavirus Disease 2019 (COVID-19) in China: A Report of 1014 Cases. *Radiology*. 2020; 296(2):E32-E40.
- Calvo C, López-Hortelano MG, de Carlos Vicente IC, Vázquez Martínez IL. Recomendaciones sobre el manejo clínico de la infección por el nuevo coronavirus SARS-CoV2. *An Pediatr (Barc)*. 2020;92(4):241.e1-241.e11.
- Onder G, Rezza G, Brusaferro S. Case-Fatality Rate and Characteristics of Patients Dying in Relation to COVID-19 in Italy. *JAMA*. 2020; 323(18):1775-1776.
- Porcheddu R, Serra C, Kelvin D, Kelvin N, Rubino S. Similarity in Case Fatality Rates (CFR) of COVID19/SARS-COV-2 in Italy and China. *J Infect Dev Ctries*. 2020;14(2):125-128.
- Gupta S, Hayek SS, Wang W, Chan L, Mathews KS, Melained ML, et al. Factors Associated with Death in Critically 111 Patients with Coronavirus Disease 2019 in the US. *JAMA Intern Med*. 2020;180(11):112.
- Giovanelli L, Quinton R. Androgenicity-not serum testosterone-correlates best with COVID-19 outcome in European males. *EBioMedicine*. 2021;66: 103286.
- Wan S, Xiang Y, Fang W, Zheng Y, Li B, Hu Y, et al. Clinical features and treatment of COVID19 patients in northeast Chongqing. *J Med Virol*. 2020;92 (7):797-806.
- Shi H, Han X, Jiang N, Cao Y, Alwalid O, Gu J, et al. Radiological findings from 81 patients with COVID19 pneumonia in Wuhan, China: a descriptive study. *Lancet Infect Dis*. 2020;20(4):425-434.
- Liu F, Li L, Xu M, Wu J, Luo D, Zhu Y, et al. Prognostic value of interleukin-6, C-reactive protein, and procalcitonin in patients with COVID-19. *J Clin Virol*. 2020; 127: 104370.
- Fox SE, Akmatbekov A, Harbert IL, Li G, Quincy Brown J, Vander Helde RS. Pulmonary and cardiac pathology in African American patients with COVID-19: an autopsy series from New Orleans. *Lancet Respir Med*. 2020;8(7):681-686.
- Thibodeaux K, Speyrer M, Raza A, Yaakov R, Serena TE. Hyperbaric oxygen therapy in preventing mechanical ventilation in COVID19 patients: a retrospective case series. *J Wound Care*. 2020; 29(Sup5a):S4-S8.
- Despres C, Brunin Y, Berthier F, Pili-Floury S, Besch G. Prone positioning combined with high-flow nasal or conventional oxygen therapy in severe Covid19 patients. *Crit Care*. 2020;24(1):256.