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ResearchArticle

Effect of COVID-19 on Cancer: With Special References to Liver Cancer

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ABSTRACT

Coronavirus is the irresistible sickness brought about through the Covid, SARS-CoV-2, which is a respiratory microbe. WHO first learned of this new virus from cases in Wuhan, People's Republic of China on 31 December 2019. People of all ages who experience fever and/or cough associated with trouble breathing or windedness, chest agony or weight, or loss of discourse or development should look for clinical consideration right away. If possible, call your health care provider, hotline or health facility first, so you can be directed to the right clinic. A great many people (about 80%) recuperate from the illness without requiring clinic treatment. About 20% of the individuals who get COVID-19 become truly sick and require oxygen, with 5% turning out to be basically sick and requiring concentrated consideration. Complications leading to death may include respiratory letdown, severerespiratory distress syndrome (SRDS), sepsis and infectedupset, thromboembolism, and/or multiorgan malfunction, including injury of the heart, liver or kidneys. In rare situations, children can develop a severe inflammatory syndrome a few weeks after infection. Anyone with symptoms should be tested, wherever possible. People who do not have symptoms but have had close contact with someone who is, or may be, infected may also consider testing – check with your local health guidelines. While a person is waiting for test results, they should remain isolated from others. Where testing capacity is limited, tests should first be done for those at higher risk of infection, such as health workers, and those at higher risk of severe illness such as older people, especially those living in seniors' residences or long-term care facilities.In this review, we give a concise diagram of the effect that COVID-19 has in disease development and therapy, and feature the arising need to consider the function of COVID-19 contamination in malignant growth movement and treatment.

KEYWORDS:COVID-19,SARS-CoV-2, PCR, COVID-19 infection in cancer, Acute respiratory distress syndrome (ARDS).

INTRODUCTION

In most situations, a molecular test is secondhand to distinguish SARS-CoV-2 and confirm COVID-19. Polymerase chain reaction (PCR) is the furthermost commonly used molecular examination. Samples are collected from the nose and/or throat with a swab. Molecular tests detect virus in the sample by amplifying viral genetic material to detectable levels. Samples are collected from the nose and/or throat with a swab. These tests are cheaper than PCR and will offer results more quickly, although they are generally less accurate. We are still learning about how well they perform and when to use them. Antibody tests can tell us whether someone has had an infection in the past, even if they have not had symptoms. Also known as serological tests and usually done on a blood sample, these tests detect antibodies produced in response to an infection. In most people, antibodies start to develop after days to weeks and can indicate if a person has had recent (IgM type antibodies) or past infection (IgG type).

The time from exposure to COVID-19 to the moment when symptoms begin is, on average, 5-6 days and can range from 1-14 days. This is why people who have been exposed to the virus are advised to stay home, apart from others, for 14 days, to forestall the spread of the infection, particularly where testing isn't effectively accessible. Optimal supportive care includes oxygen for severely ill patients and those who are at risk for severe disease and more advanced respiratory support such as ventilation for patients who are critically ill. Dexamethasone is a corticosteroid that can help reduce the length of time on a ventilator and save lives of patients with severe and critical illness. Results from the WHO's Solidarity Trial indicated that remdesivir, hydroxychloroquine,

lopinavir/ritonavir and interferon regimens seemed to have next to zero impact on 28-day mortality or the in-medical clinic course of COVID-19 among hospitalized patients.

Infection patients are represented on different occasions more powerless to SARS-CoV-2 pollution with possible defenseless speculation than people without ailment in light of their focal immunosuppressive state accomplished through the wickedness and anticancer therapies, for example, chemotherapy or clinical procedure (AACR Virtual Meeting, 2020). The perseveringly growing amounts of threat patients and the development in amounts of COVID-19 sicknesses in infection patients either unfamiliar, investigated, under treatment or under decrease, want to move rapidly to fathom the interconnection and make novel therapies to cotarget viral pollutions and harm. In any case, little is considered novel SARS-CoV-2 science and confined to no investigation has been finished with respect to whether and how SARS-CoV-2 tainting impacts illness cells.

COVID-19 & Cancer

Besides, different dangers, identified with isolate, should be considered in overseeing malignant growth and its confusions: Wang et al. outstandingly description issues of admittance to medical services, medication deficiencies and postponement in conclusion of therapy poisonousness [1]. The powerless conjecture of danger patients yielded with COVID-19 illness was in like manner owing to the conclusion not to surrender convinced (metastatic) patients to genuine thought. In view of these starter data, in any occasion 3 aftereffects of the epidemic for the organization of illness patients tin be elevated:

Malignant growth patients appear to be additional powerless to SARS-CoV-2 disease, and difficulties (emergency clinic affirmation, escalated care, demise) are most likely more incessant than in everyone [2,3].

Coronavirus 19+ malignant growth patients show more serious danger of iatrogenic drugrelated issues, because of polymedication [4].

The deadly disease is tying up extensive human and monetary assets and be concerned movement is every now and again rescheduled or dropped, briefly adjusting malignant growth quiet administration. The absence of enormous clinical examinations in malignancy patients confronting COVID-19 lead logical social orders and master bunches rules to advocate deferring medical procedure and medication therapy at times. The postponement of disease analyze must be evaluated in the months to come [5].

Malignant growth tolerant administration with regards to the COVID-19 virulent disease

Nearby are two developing perils for disease patients: a 3-overlay more noteworthy contamination hazard than in everyone (related with helpless forecast and more prominent mortality) and the danger of postponed admittance to finding, ebb and flow care and restorative advancements. The test is in this manner to evaluate, dependent upon the situation, the compromise between deferred determination and therapy of malignant growth and presentation toward SARS-CoV-2.

Restricting the danger of COVID-19 contamination within malignancy

Toward restrict danger of SARS-CoV-2 pollution with dangers related through malignancy medicines, nearby have been a few rumors of involvement and suggestions as per tumor area by master gatherings and logical social orders [6-8] and outline are currently accessible [9]. Malignancy patients are additional obligated to become contaminated by SARS-CoV-2 because of safe gloom actuated by the disease and medicines, for example, chemotherapy and medical procedure [10, 11].

Hierarchical measures

For risky improvement patients, the trouble of social taking out is furious about restricted contact with clinical thought regions. Any complete measure decreasing the number and scope of get-togethers, chemotherapy social events and certifications are salutation. Watchfulness is to exist broadened concerning hazard factors, age > 65 years, and comorbidities [12]. The general method to evade interaction between danger fuses COVID without 19 alleyways in upkeep focuses or sorting out idea in a substitute construction. For casualties getting oral antineoplastics, inhospital progression (clinical discussions, pharmaceutic social events, strong medication checking) are to be suspended at whatever point workable for telemedicine [8].

Adjusting anticancer therapy methodology

The administration of malignant growth patient's treatment keeps on being talked about one case at a time holderkeen on the administration case meetings and clinicians are needed to take choices for securing patients with respect to the arising hazard. The absence of distributed information or directed clinical investigations makes it hard to take the correct remedial choice. On account of the crisis circumstance, the rundown of proposals can't be founded exclusively on the most elevated proof, clinical preliminaries and meta examinations. Transformations as altered, postponed or suspended anticancer therapies were proposed chiefly dependent on master agreement. Furthermore the primary Chinese arrangement are missing of consistency for showing the huge danger in malignancy patients [13, 14].

Therapy of COVID-19+ disease patients: Anticancer therapy and dangers brought about by hostile to COVID-19 therapy (barring concentrated consideration state)

In sickness patients, finding of COVID-19+ shows permissiontoward a specific COVID-19 element, or move used forcancerwithin patients. In cancer focuses, submitted COVID-19 element, countingcomforting idea units, are organized, subordinate upon the measure of patients. The board be astonishing, looking over the potentially unsafe guess in COVID-19, damage of accidental taking into

account risky improvement treatment end in reformist danger, and the immunosuppression hazard achieved by the two hardships and possibly by the significant prescriptions.

Lopinavir/ritonavir

The protease blocker union lopinavir and ritonavir is regularly cast-off to manage HIV-1 corrupting. About in-vitro and experimental information established its improvement on SARS-CoV-2 infection. The assessments utilized for COVID-19 is equivalent to HIV-1 management: 400/100 mg, twice bit by bit for 7–14 days.

Pharmacokinetic collaborations

Lopinavir and ritonavir, cytochrome P450 isoform CYP3A, as such expanding the social affair of various CYPsubstrate drugs. They be likewise protein P-gp blockers inciting broadened assembling of P-gp substrates.

Pharmacodynamic communications, added substance unfriendly impacts

Diverse TKIs, doxorubicin and ondansetron genuinely augment QT stretch along withbe supposed to not be identified with lopinavir or ritonavi. The comparable is liberal for serotonin reuptake blockers, occasionally suggested for horrendousness in infection patients [15].

Hydroxychloroquine

Hydroxychloroquine is utilized to thwart essential lupus scenes and safe structure and provocative illness. Its development joins viral ruining constraint (exploratory) and immunomodulation disease. A stacking segment at Day 1 pursue up by 400 mg dependably segment for 9 days is regularly declared in considers. The stacking piece is inside the maximal 600 mg/day picked in the promote guaranteeing (400 mg twice step by step in clinical fundamentals).

Pharmacodynamic connections, added substance unfriendly impacts

Hydroxychloroquine obtains a peril of QT continuation and torsade de pointe occasion when identified with various meds with a comparative destructiveness profile. ECG checking is commonly settled and should be methodicallly done in case of explicit antineoplastics [16].

Interferon beta-1a

Interferon beta-1a is demonstrated in numerous sclerosis and is assessed in DisCoVeRy preliminary at 44 μg at 1, 3 and 6 days. It shows an entirely positive collaboration profile, with no cytochrome-or carrier interceded impacts. Some uncommon instances of immune system hepatitis or serious liver disappointment were accounted for. Liver checking ought to be strengthened if there should arise an occurrence of relationship to conceivably hepatotoxic medications, for example, crizotinib or lenalidomide.

Option and corresponding medication

Basic and substitute Medicines (CAM) are unavoidable in damaging improvement [17], and must be considered in the current crisis. Winning deficiencies regarding the avoiding and management of COVID-19 enliven use to CAM [18, 19]. The feasible hurtfulness of unequivocal plants can depositthrough against COVID-19 prescription peril and pharmacokinetic drug-facilitated endeavors be able totake place, and requires transmission. Prominent dangers interlace [20, 21]:

Coronavirus and clinical exploration: Taking record of the malignancy patient's circumstance Clinical examination on COVID-19 treatment

The prime point is to make dealing drugs. The subsequent is to dispatch quick pathwayforbidden groundworks [22], devoid of methodological reinforcement approaches and arranged to evaluate enormous attainability of potent captivating solutions beginningbeginning time of contamination to bleeding edge raised thought.A significant point is the usage of versatile preliminaries ready to give fast moderate outcomes.

Clinical evaluation in oncology in the COVID-19 pandemic period

Clinical examination in oncology is the establishment for the heads of compromising improvement patients and the prime point in clinical appraisal in France. The French public solution security office, ANSM [23], and the majority oncology packs have in use conditions as for the issue. On the European level, EMA and two or three gatherings deal with the "Seminar on the association of clinical essentials during the COVID-19 pandemic". A structure of various public and by and large principles in this field has been beginning late scattered [22].

Oncology clinical medication under the COVID-19 pandemic

Since the create of the crisis, center medication experts have been unflinchingly pulled in with the clinical and care packs in giving the thought and raised idea units accommodated COVID-19. They are also connected with sketch up energetic changing treatment shows, including elective structures to adjust to requirements and quickpathway fundamentals assessmanagement techniques in destroyed patients [24, 5].

Rules and finishes on drug store practice in the COVID-19 setting have been circled [24,25,26], at any rate none zeroing in on oncology drug store.

– Maintain and fortifying oncology medication store development (arrangement assessment, partition change, solution bargain, educational turn of events, etc), prioritization (of patients all things considered raised iatrogenic risk) and redoing as demonstrated by neighborhood limit.

– Deploying new oncology clinical medication store dominance zeroed in on neutralization of prescription related issues (opposing effects, participations) with against COVID-19 treatment in current thought.

– Ensuring harm patients' induction to headways if there should be an event of COVID illness, by setting up consistent composing watch on threat patients' hazard related to drugs evaluate in clinical primers, considering the present "Advancing clinical starters of COVID-19 treatments and recommendations for threatening development patients".

– Maintaining drug store gatherings and badge of the current eliminating and safety efforts.

– Maintaining dynamic commitment of medication experts in the multidisciplinary case parties beneath near circumstances with respect to different people, as incited by the French public risky improvement affiliation [27], and in any gave COVID-19 multidisciplinary pack social events.

– Proficiency and close joint exertion with clinical oncology groups in framework dynamic. This unites decision of chemotherapy shows when the covered framework isn't, by and by feasible, related proposal (group equivalences among parenteral and oral structures), progression of new changed shows (level part and cycle timing in immunotherapy), and giving subcutaneous structures to antibodies i.e. rituximab, trastuzumab. It likewise gets dynamic help together with assistance drugs, those influencing medicine affiliations.

– Organization of telemedicine (teleconsultation and telemonitoring) to diminish close solution store work (improvement of patients beneath oral treatment) [28].

– Interactions with network prosperity specialists (network drug experts, family masters, etc) in an organization clinical facility association (change from parenteral to oral chemotherapy, oral anticancer prescriptions, etc), if probable by methods for sheltered crisis center organization stages.

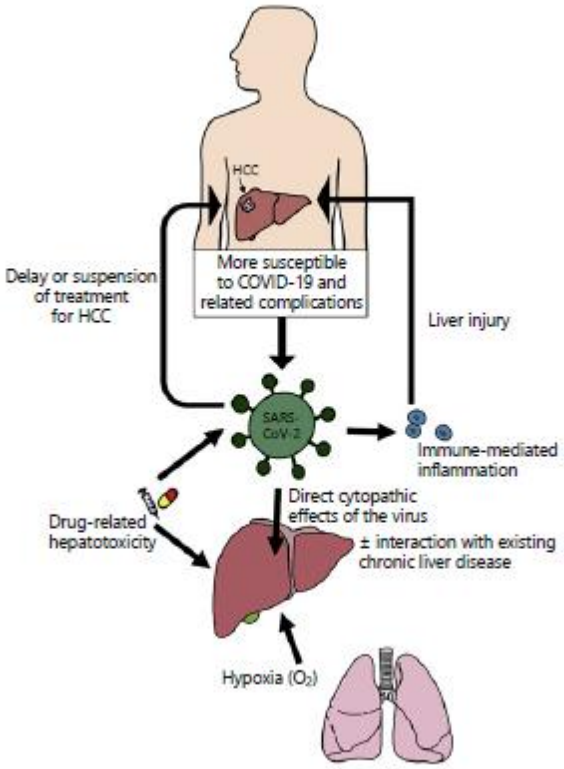

Figure No. 1: Collision of SARS-CoV-2 on the liver

Impact of COVID-19 on the Liver

Current data, fundamentally survey ornamentation investigates, show that 15–54% of patients with announced COVID-19 have hepatic injury [29-33]. Raised gammaglutamyl transferase has furthermore been addressed in up to 54% of patients with COVID-19 extended stood separated from ALT/AST levels [34, 35]. In different patients, the hepatic injury is transient yet enduring insidiousness has been addressed in remarkable occasions of COVID-19 [31, 35, 29, 32].

The instrument of hepatic injury is likely multifactorial. Direct cytopathic effects of the debasement on hepatocytes and furthermore [36, 34]. Among those experts, lopinavir/ritonavir could deliver liver protein levels, and the relationship of tocilizumab for disease incited cytokine release issue is related with extended AST/ALT levels and danger of hazardous hepatitis [37].

Impact of COVID-19 on Cancers

Various partner highlight on COVID-19 among dangerous progression patients or survivors has been addressed. A couple of recognitions can be made utilizing those evaluations. First thing, patients with ruinous headway are at a higher peril of encountering COVID-19 than non-ailment patients. As appeared by a frill appraisal of peril patients in China, risk factors for the improvement of COVID-19 breaker a culmination of non-little cell breakdown in the lungs and an age more than 60 years [38]. Including a higher assertion rate to concentrated thought units and higher mortality, than in non contamination COVID patients [38, 39, 40]. For example, an examination saw 18 patients with a foundation set apart by torment from an organized 1,590-liberal public data base of COVID-19 in China [39].

Impact of COVID-19 on Liver Cancers

HCC is underrepresented in many start at now open assessments on risk patients with COVID-19 defilement. In data from China, only 2 HCC patients were picked in the audit game-plan [41]. More stable relationship in HCC began from a game plan reported by an Italian social request [42]. The social gathering has managed the COVID-19 crisis by changing clinical practices in the

relationship of HCC to keep's first involvement in the disease. In the examination, the makers assessed 42 HCC patients between February 24 and March 20, 2020 (during the COVID-19 produce in Italy) to patients treated during a comparative period in 2019 (going before the COVID-19 launch), and found that 11 patients (26%) had delay of treatment of 2 months or longer [42].

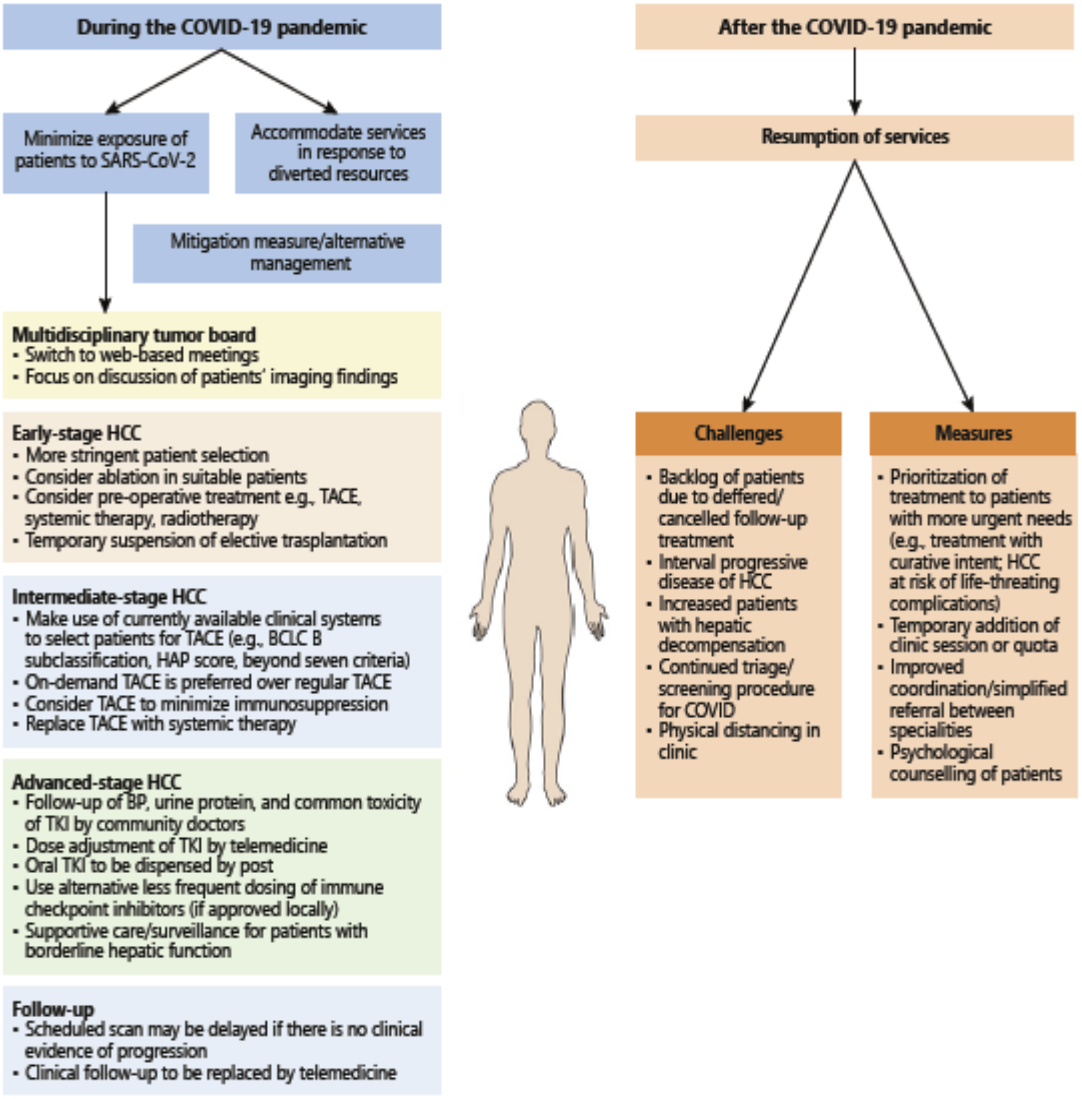

Figure No. 2: Amendment of managing during the COVID-19

Assessments on the Resumption of Services after the Pandemic

It is obvious that the COVID-19 pandemic will resolve reliably later on, and most clinical associations will be continued thusly. For HCC, four examinations are fundamental during making game plans for the resumption of standard organizations (Fig. 2). At first, a bob back in the amount of patients and courses of action is unavoidable on account of the excess of surrendered or dropped plans during the pandemic. To oblige the flood searched after, a particularly coordinated crisis method is expected to put together clinical courses of action, assessments, and drugs to patients with all the more quick moving toward necessities, with models intertwining those with HCCs amicable to treatment with therapeudic plan or patients in danger for a broke tumor. An additional office meeting or whole might be relied upon to offer food to the interest, in spite of how this is should have been endeavoring in the fundamental scarcely any broad stretches of association resumption. Likewise, range improvement of HCCs may have occurred in patients with more unprecedented tumor science during the pandemic due to the deferral or discontinuance of treatment.

Conclusion

The current pandemic requires enormous brief change. The current principles are depended upon to go with emergency office drug experts in this point of view, in a

circumstance where all prescription practices are progressing. Oncology clinical solution store ought to be guaranteed, as it distress fragile patients and ought to have the choice to adjust to changing setting of data about COVID-19 trouble and treatment structures, extraordinarily in clinical assessment. The makers wish to feature considering and treatment, postponement and impedance of chemotherapy cycles and the basic obstructions to sickness patients' acknowledgment to movement all through the pandemic. The collision of refreshing consideration in this momentous emergency for hurt patients must be reviewed and shared.

REFERENCES

1. Wang H, Zhang L. Risk of COVID-19 for patients with cancer. Lancet Oncol 2020 Apr;21(4):e181.
2. Liang W, Guan W, Chen R, Wang W, Li J, Xu K, et al. Cancer patients in SARS-CoV-2 infection: a nationwide analysis in China. Lancet Oncol 2020;21(3):335–7.
3. Zhang L, Zhu F, Xie L, Wang C, Wang J, Chen R, et al. Clinical characteristics of COVID-19-infected cancer patients: a retrospective case study in three hospitals within Wuhan, China. Ann Oncol 2020;31(7):894–901.
4. Yang G, Zhang H, Yang Y. Challenges and countermeasures of integrative cancer therapy in the epidemic of COVID-19. 1534735420912811 Integr Cancer Ther 2020;19.
5. Cortiula F, Pettke A, Bartoletti M, Puglisi F, Helleday T. Managing COVID-19 in the oncology clinic and avoiding the distraction effect. Ann Oncol 2020;31(5):553–5.
6. Spinelli A, Pellino G. COVID-19 pandemic: perspectives on an unfolding crisis. Br J Surg 2020;107(7):785–7.
7. Tuech J-J, Gangloff A, Di Fiore F, Michel P, Brigand C, Slim K, et al. Strategy for the practice of digestive and oncological surgery during the Covid-19 epidemic. J Visc Surg 2020;157(3S1):S7–12.
8. You B, Ravaud A, Canivet A, Ganem G, Giraud P, Guimbaud R, et al. The official French guidelines to protect patients with cancer against SARS-CoV-2 infection. Lancet Oncol 2020;21(5):619–21.
9. Burki TK. Cancer guidelines during the COVID-19 pandemic. Lancet Oncol 2020;21(5):629–30.
10. Kamboj M, Sepkowitz KA. Nosocomial infections in patients with cancer. Lancet Oncol 2009;10(6):589–97.
11. Longbottom ER, Torrance HDT, Owen HC, Fragkou PC, Hinds CJ, Pearse RM, et al. Features of postoperative immune suppression are reversible with interferon gamma and independent of interleukin-6 pathways. Ann Surg 2016;264(2):370–7.
12. Wang D, Hu B, Hu C, Zhu F, Liu X, Zhang J, et al. Clinical characteristics of 138 hospitalized patients with 2019 novel coronavirus-infected pneumonia in Wuhan, China. JAMA 2020;323(11):1061–9.
13. Robinson AG, Gyawali B, Evans G. COVID-19 and cancer: do we really know what we think we know? Nat Rev Clin Oncol 2020;17(7):386–8.
14. Mehta V, Goel S, Kabarriti R, Cole D, Goldfinger M, Acuna-Villaorduna A, et al. Fatality rate of cancer patients with COVID-19 in a New York hospital system. Cancer Discov 2020.
15. Morganroth J, Shah RR, Scott JW. Evaluation and management of cardiac safety using the electrocardiogram in oncology clinical trials: focus on cardiac repolarization (QTc interval). Clin Pharmacol Ther 2010;87(2):166–74.
16. Cautela J, Lalevee N, Ammar C, Ederhy S, Peyrol M, Debourdeau P, et al. Management and research in cancer treatment-related cardiovascular toxicity: challenges and perspectives. Int J Cardiol 2016;224:366–75.
17. Pourroy B, Tournamille J, Bardin C, Slimano F, Chevrier R, Rioufol C, et al. Providing oncology pharmacy services during the coronavirus pandemic: French society for oncology pharmacy (Societe Francaise de Pharmacie Oncologique- SFPO) guidelines. JCO Oncol Pract 2020.
18. Brown JD. Cannabidiol as prophylaxis for SARS-CoV-2 and COVID-19? Unfoundedclaims versus potential risks of medications during the pandemic. Res Soc Adm Pharm 2020. https://doi.org/10.1016/j.sapharm.2020.03.020.
19. Gray PE, Belessis Y. The use of Traditional Chinese Medicines to treat SARS-CoV-2may cause more harm than good. Pharmacol Res 2020.
20. Grenoble University. Hedrine : Herb Drug Interaction Database. Available from:[accessed April, 23th 2020].
21. Memorial Sloan Kettering Cancer Center. About Herbs, Botanicals & OtherProducts. Available from: https://www.mskcc.org/cancer-care/diagnosistreatment/symptom-management/integrative-medicine/herbs [accessed April,23th 2020].
22. de Paula BHR, Araujo I, Bandeira L, Barreto NMPB, Doherty GJ. Recommendationsfrom national regulatory agencies for ongoing cancer trials during the COVID-19 pandemic. Lancet Oncol 2020;21(5):624–7.
23. French national drug safety agency. COVID-19 – Clinical Trials underway. Available from: https://www.ansm.sante.fr/Activites/Essais-cliniques/COVID-19- Essais-cliniques-en-cours/(offset)/0 [accessed April, 6th 2020].
24. Eman Tariq Ali, Adheed Khalid Alsharrad, Falah Hassan Shari,H. N. K. Al-Salman, 17β -estradiol Hormone and Interleukin1-beta Change Related to Menopause inthe Women with Rheumatoid

ArthritisAsian Journal of Pharmaceutics, Apr-Jun 2019 • 13 (2) | 110-118.
25. Falah Hassan Shari, Hiba Dawood, Jubran K. Hassan, Qais A. ALJazeari, Mazin A.A. Najm, Ahmad Salahuddin, H. N. K. Al-Salman, To study the effect of taurine on the effects of vital bones and regulate the level of glucose in type II diabetes, Int. J. Res. Pharm. Sci., 10(3), 2545-2551.
26. International Pharmaceutical Federation. FIP Covid-19 Information Hub - FIP. Available from: https://www.fip.org/coronavirus [accessed April, 23th 2020].
27. Guidelines for tumor board meetings in the context of Covid-19. Available from: https://www.e-cancer.fr/Professionnels-de-sante/Coronavirus-COVID-19/ Conseils-sur-l-organisation-des-reunions-de-concertation-pluridisciplinaire-RCPen-cancerologie-dans-le-contexte-de-l-epidemie-au-Covid-19 [accessed April, 6th 2020].
28. Portnoy J, Waller M, Elliott T. Telemedicine in the Era of COVID-19. J Allergy Clin Immunol Pract 2020;8(5):1489–91.
29. Guan WJ, Ni ZY, Hu Y, Liang WH, Ou CQ, He JX, et al; China Medical Treatment Expert Group for Covid-19. Clinical characteristics of coronavirus disease 2019 in China. N Engl J Med. 2020 Apr; 382(18): 1708–20.
30. Yang X, Yu Y, Xu J, Shu H, Xia J, Liu H, et al. Clinical course and outcomes of critically ill patients with SARSCoV- 2 pneumonia in Wuhan, China: a single-centered, retrospective, observational study. Lancet Respir Med. 2020 May; 8(5): 475–81.
31. 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 Feb; 395(10223): 507– 13.
32. Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. Lancet. 2020 Feb; 395(10223): 497–506.
33. Shi H, Han X, Jiang N, Cao Y, Alwalid O, Gu J, et al. Radiological findings from 81 patients with COVID-19 pneumonia in Wuhan, China: a descriptive study. Lancet Infect Dis. 2020 Apr; 20(4): 425–34.
34. Xu L, Liu J, Lu M, Yang D, Zheng X. Liver injury during highly pathogenic human coronavirus infections. Liver Int. 2020 May; 40(5): 998–1004.
35. Zhang C, Shi L, Wang FS. Liver injury in COVID-19: management and challenges. Lancet Gastroenterol Hepatol. 2020 May; 5(5): 428–30.
36. Wong SH, Lui RN, Sung JJ. Covid-19 and the digestive system. J Gastroenterol Hepatol. 2020 May; 35(5): 744–8.
37. Genovese MC, Kremer JM, van Vollenhoven RF, Alten R, Scali JJ, Kelman A, et al. Transaminase Levels and Hepatic Events During Tocilizumab Treatment: Pooled Analysis of Long-Term Clinical Trial Safety Data I Rheumatoid Arthritis. Arthritis Rheumatol. 2017 Sep; 69(9): 1751–61.
38. Yu J, Ouyang W, Chua MLK, Xie C. SARS-CoV-2 transmission in patients with cancer at a tertiary care hospital in Wuhan, China. JAMA Oncol. 2020; 6(7): 1108–10.
39. Hussein N. AL-Salman, Eman T. Ali, Omar A. Almukhtar, and Majid. S. Jabir, 2-benzhydrylsulfinyl-N-hydroxyacetamide extracted from fig: A good therapeutic agent against Staphylococcus aureus, AIP Conference Proceedings **2213**, 020223 (2020); https://doi.org/10.1063/5.0000165.
40. H. N. K. Al-Salman · Eman T. Ali · Majid Jabir · Ghassan M. Sulaiman · Shaker A. S. Al-Jadaan, *2-Benzhydrylsulfinyl-N-hydroxyacetamide-Na* extracted from fig as a novel cytotoxic and apoptosis inducer in SKOV-3 and AMJ-13 cell lines via P53 and caspase-8 pathway, European Food Research and Technology, https://doi.org/10.1007/s00217-020-03515-x, 28 may 2020.
41. Liang W, Guan W, Chen R, Wang W, Li J, Xu K, et al. Cancer patients in SARS-CoV-2 infection: a nationwide analysis in China. Lancet Oncol. 2020 Mar; 21(3): 335–7.
42. Xia Y, Jin R, Zhao J, Li W, Shen H. Risk of COVID-19 for patients with cancer. Lancet Oncol. 2020 Apr; 21(4):e180.