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Najada **KALLASHI**/ Erjona **ZOGAJ**/ A. **STRAKOSHA**/ A. **DEDEJ**/ F. **NASTO**/ S. **LAKO**/ L. **BERDICA**/ N. **THERESKA**/ Amarilda **ARAPI**/ Emiljana **TOSLLUKU**/ Klotilda **VRENJO**/ Oltiana **PETRI**/ Esmeralda **THOMA**/ Leonard **MOLLA**/ Krenar **PREZA**/ Artan **SIMAKU**/ Kristi **CELA**/ Mimoza **LLAVDANITI**/ Jetmira **SHEHU**/

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medicus@uet.edu.al
www.uet.edu.al/medicus

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content

The importance of hybrid image

Najada KALLASHI
Trauma University Hospital of Tirana, Albania
Lectur at European University of Tirana

Erjona ZOGAJ
Lectur at European University of Tirana

Introduction

Hybrid image is defined as the merging of two or more imaging technologies into a single, new image form. Typically, this new form is synergistic - that is, more powerful than the sum of its parts. Although some modalities of hybrid images can be used simply to describe anatomy, the most distinctive feature of hybrid images is its potential to show in vivo molecular processes within the anatomical context. Existing hybrid imaging modalities include ultrasound (US) / magnetic resonance imaging (MR), MR imaging / angiography, computed tomography (CT) / angiography, photon emission computed tomography (SPECT) / CT, positron emission (PET) / CT. Most of these modalities have the potential to aid in the development of personalized molecular medicine.

Objectives

This article focuses on some key points, focusing mainly on positron emission tomography / PET / CT computed tomography. Global trends in the acquisition, use and image interpretation practices of hybrid imaging equipment and the introduction of new requirements for medical staff training and clinical prioritization are reviewed. It also highlights the current benefits of hybrid imaging for patient care and continuity of work and the potential of hybrid imaging to advance the development of personalized drugs and molecular medicine.

Hybrid Imaging: A Vital Tool for Molecular Imaging and Personalized Molecular Medicine

Molecular imaging has become an important tool for preclinical as well as clinical research in a wide range of disciplines, including oncology, cardiology, neurology, psychiatry, and pharmacology. Molecular imaging shows a promising future as a tool to accelerate laboratory discoveries in clinical practice and the application of personalized, molecularly targeted drugs.

Molecular imaging can be performed in many different modalities, including CT, MR, MR, SPECT, PET, and optical imaging. With the exception of diffusion weight MR images and MR spectroscopic images, which utilize the image of water molecules and metabolites, respectively, all molecular imaging techniques depend on the use of exogenous probes to provide the image signal or contrast. Probes usually consist of an "affinity" component that interacts with the target and a "signaling" component that provides image contrast. While radiolabeled probes are used for PET or SPECT, the signaling component may be a fluorochrome in the optical image or a chelate containing a paramagnetic atom in the MR image. Regardless of their composition, molecular imaging probes are designed to reveal specific properties that distinguish normal from pathological tissue.

Of the molecular imaging techniques available, PET is currently the most powerful and versatile. Not only does the special physics of PET images make it extremely sensitive and quantitative, but the wide range of radionuclides it emits positrons (e.g., fluorine 18 [18F], carbon 11 [11C], nitrogen 13, iodine 124 [124I], copper 64 [64Cu], gallium 68 [68Ga] and zirconium 89) allow the power of the tracer principle to extend to research and discovery that is relevant to most human diseases and the development of medicine. Essential for the development and implementation of new tracers - and thus for the advancement of molecular imaging - is the extensive biodistribution and biosafety testing of tracers, a process that requires a team effort. As new trackers enter clinical evaluation, the use of hybrid equipment that combines nuclear medicine and anatomical imaging becomes essential. Therefore, the future of molecular imaging will depend on the availability of radiation chemists, radiation pharmacists, and nuclear physicists, as well as physicians whose training combines nuclear medicine, molecular biology, and diagnostic radiology. It is essential to foster a strong working relationship between nuclear medicine and the radiology communities, so that knowledge from both specialties is combined into a rich matrix that supports continuous innovation and optimal patient care.

Although the PET / CT hybrid already has a number of clinically important applications, many more are expected to come to light over the next decade. The increased use of PET / CT is expected to stem not only from greater use of 18F

fluorodeoxyglucose (FDG) but also from the introduction of a new radiotherapy army that will enable the discovery of previously hidden properties of human disease and the delivery of "roadmaps" for patient, therapy and disease management.

Promising new PET tracers now range from metabolic substrates, hypoxic agents, neuromechanical transporters, and drugs that utilize the specific metabolism mediating normal and pathological tissue function to monoclonal antibodies, peptides, and molecules that have fine molecular surface specificity detection. and those expressed in disease. In research centers around the world, the number of labeled radiotherapy trackers used for patient care is increasing. For example, from 2005 to 2008 at Ludwig Maximilian University in Munich, Germany, the percentage of all PET and PET / CT studies performed each year with 18F-FDG decreased from 93% to 73%, while the total number of trackers labeled on the radio in use increased from three to nine. The table lists some of the radio trackers that are now being used in clinical research programs around the world.

Radiotracer	Function or Molecular Target
Phenotypic probe	
^{18}F-FDG	Glycolysis
^{11}C-methionine	Amino acid transport
^{18}F-fluorocyclobutane-1-carboxylic acid	Amino acid transport
^{18}F-fluoro-L-thymidine	Cell proliferation
^{18}F-fluorodihydrotestosterone	Androgen receptor
^{18}F-fluoroestradiol	Estrogen receptor
Sodium ^{124}I	Sodium iodide symporter
^{11}C acetate	Krebs cycle, fatty acid synthesis
^{18}F-fluoromisonidazole	Hypoxia
Targeted probe	
^{68}Ga-Fab'2 Herceptin	HER2
^{124}I-cG250	Carbonic anhydrase IX
^{124}I-A33	A33 antigen
^{124}I-3F8	GD2
^{64}Cu-Herceptin	HER2
Reporter gene imaging probe	
^{124}I-2'-fluoro-2'-deoxy-1-β-D-arabinofuranosyl-5-iodouracil	Thymidine kinase (herpes virus)

Although oncology dominates the use of PET images, applications for molecular imaging are also growing in other areas. In a recent survey of members of the European Association of Nuclear Medicine (EANM) (2), 60%, 54% and 40% of respondents reported that their institutions used PET or PET / CT for applications in neurology, infection and / or inflammation, and cardiology, respectively. In these areas, as in oncology, new PET trackers are expected to change the way disease processes are understood and managed. For example, a recent study showed that PET imaging in patients with Dementia with amyloid

plaques or receptor ligands may help detect some cases of Dementia earlier than MR imaging, PET, or conventional neurological testing. In many countries, a growing number of neurologists, cardiologists and oncologists are being trained in nuclear medicine because they see the potential of PET / CT imaging and theragnostic to dramatically improve patient care.

Global distribution and use of equipment

Trends in equipment purchase and distribution confirm that PET / CT is globally accepted as a vital clinical imaging tool and a valuable improvement over standalone PET. Today, the highest concentrations of PET and PET / CT units per capita are in the United States (approximately 4 units per million inhabitants) and Japan (approximately 3 units per million inhabitants), followed by Belgium, Luxembourg, Denmark and Switzerland (each with approximately 2 units per million inhabitants). Austria, the Netherlands, Italy and South Korea have between 1.5 and 2.0 units per million inhabitants.

In the past 10 years, installations of PET / CT hybrid systems have virtually replaced those of standalone PET scanners. This trend has been observed globally (Figure 1), and many large equipment manufacturers no longer offer standalone PET scanners. A trend towards the inclusion of multi-section CT scanners in PET / CT systems has also been observed.

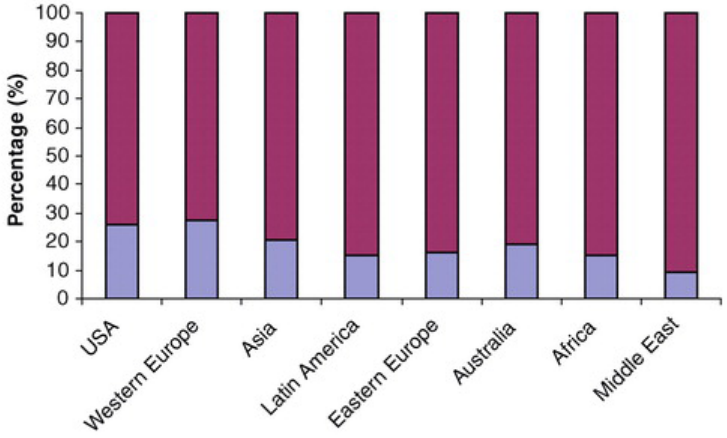
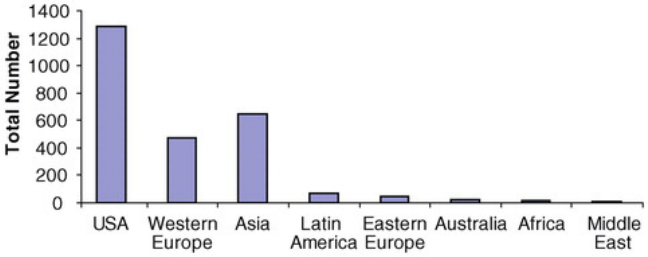


FIGURE 1A: Bar graphs show (a) the percentages of independent PET scanners (blue strips) versus percentages of PET / CT scanners (purple stripes) worldwide and figure 2 (b) the total number of PET and PET scanners / CT worldwide. Data also provided by Maurizio Dondi, MD, PhD, International Atomic Energy Agency, Vienna, Austria, in February 2010, based on surveys from 2009.



From 2001 to 2008, the percentage of PET units installed per year in the United States that were independent PET scanners fell from 60% to 0%. Until 2008, independent PET units accounted for only 26% of all fixed PET units in the United States. Concordantly, from 2005 to 2008, the percentage of PET studies conducted using independent PETs dropped from 30% to 13%.

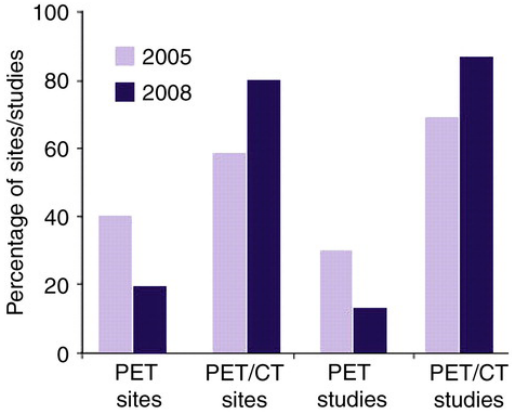


FIGURE 3: The bar graph shows the percentages of PET-only countries and studies versus PET / CT countries and studies in the United States, 2005–2008.

Overall, in the United States, the use of PET and PET / CT has grown at an extraordinary rate in the last 10 years. Surveys conducted by market research firm IMV (Greenbelt, Md) showed an average annual increase of 10.4% in the number of patient studies conducted from 2008 to 2015 in PET and PET / CT in the United States.

The need for comprehensive training in Nuclear Medicine and Radiology

To make optimal use of hybrid images in patient care, the healthcare team must be fully trained in the operation of nuclear medicine and standard radiological

ingredients for completing hybrid images. In addition, physicians should be trained to fully interpret the anatomical and molecular data obtained. This section examines global trends in accreditation, training, and prioritization in hybrid images.

Radiology and nuclear medicine are distinct imaging specialties with different areas of applicability. Although training in radiology emphasizes anatomy and pathology, training in nuclear medicine emphasizes biochemistry and pathophysiology. As a survey of members of EANM and the European Society of Radiology (ESR) showed, specialists in both fields generally agree that more comprehensive training is needed to facilitate the optimal use of hybrid imaging.

In training radiologists, subjects particularly in need of greater attention include the radiolucent principles of molecular imaging, the biometrics of tracer use (e.g., separation modeling and dosimetry), and image physics. Such subjects will become increasingly important as radio-based molecular image approaches are integrated into personalized medicine. In contrast, nuclear medicine physicians need more extensive training in cross-sectoral imaging. For example, 4 months - the minimum amount of time devoted to cross-sectoral imaging at nuclear medicine residences in the United States - may not be enough to gain a true skill in modern CT imaging, let alone the full range of studies of cross-cutting images

Financial Aspects

Global Hybrid Image Market Analysis

The research report studies the Hybrid Images market using various methodologies and analyzes to provide accurate and in-depth information about the market. For a clearer understanding, it is divided into several parts to cover different aspects of the market. Researchers have used primary and secondary methodologies to gather information in the report. According to the report, the global market value of Hybrid Images is projected to reach USD 7090.3 million by 2026, from USD 5734.6 million in 2020, with a CAGR of 3.6% during 2021-2026.

This increase in investment that is expected to have in this area still supports the great importance of the Hybrid image in Medicine and patient care.

Conclusion

To realize the full potential of hybrid imaging, different disciplines of clinical and technical expertise must come together. Because the use of PET / CT is growing

faster than that of any other hybrid imaging technique, it is particularly important for diagnostic radiologists and nuclear physicians to establish new avenues of collaboration within institutions, nationally, and internationally. Issues to be addressed together include:

- When should hybrid image be used?
- How to ensure quality image and optimal interpretation, clinically important?
- How best to train staff and secure credentials in hybrid image for future practitioners, practitioners, technicians and other healthcare professionals.

Moreover, recognizing that globalization is inevitable, leaders in both specialties need to work towards global standardization of hybrid images to promote rapid information exchange in preclinical research, clinical trials, and patient care.

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**This article is a review of several articles speaking out the importance of Hybrid Imaging*

C3 glomerulonephritis in post transplanted patient with MGRS (A case report)

A. STRAKOSHA
Nephrology Mother Theresa Hospital ALBANIA

A. DEDEJ
Nephrology American Hospital ALBANIA

F. NASTO
Nephrology American Hospital ALBANIA

S. LAKO
Hematology American Hospital ALBANIA

L. BERDICA
Anathomic Pathology American Hospital ALBANIA

N. THERESKA
Nephrology American Hospital ALBANIA

Abstract

Introduction and Aims C3 glomerulopathy includes several rare forms of glomerulonephritis with underlying defects in the alternative pathway of complement cascade.It is characterized by predominant C3 deposition in glomeruli due to abnormal activation of the alternative pathway of complement system. C3 GN has been reported to be associated with several systemic diseases. Methods We

will describe a case presenting C3 GN in a patient with monoclonal gammopathy of renal significance (MGRS) Results A 61 years old man patient presented with gross hematuria,anemia ,renal disfunction (creatinemia 2,4 mg/dl), proteinuria 814 mg/24 h.The patient was transplanted two years ago and he was taking corticosteroids ,MMF,tacrolimus and entecavir for hepatitis B .Serum protein electrophoresis ; hypogammaglobulinemia with a small homogeneous spike-like peak. Serum Kappa free light chains 32,4 mg/dl ,serum Lambda free light chains 9.3 mg/dl.Ratio 3,4 . Autoimmune tests ANA, ANCA, Anti ds DNA C3 and C4 were negative.Urine Kappa Light Chains 26,4 mg/24 h,urine Lambda Light Chains 6,6 mg/24h.Urine Kappa/Lambda ratio 4. After consultation with haematolgist results of bone narrow biopsy came for monoclonal gammopathy ,and FISH conclusion is presence of t(11,14)(q13,q32)which originated from IgH / CCND1 retraction and 1q21 acquisition.Renal biopsy is C3 glomerulopathy with mesengial and diffuse endocapillary proliferation under light microscope and diffuse deposition of C3 and no immunoglobulin under immunofluorescence microscope. Conclusions Monoclonal gammopathy of renal significance MGRS is a term to describe a group of haematological disorders associated with kidney disease that fail to meet the standard definitions for MM or lymphoma. In such cases, the renal impairment is often linked to the underlying haematological disorder. The intention was to make a clear distinction between MGUS , a benign asymptomatic condition, and MGRS, which may be associated with significant morbidity and mortality.

Background

C3 glomerulopathy includes several rare forms of glomerulonephritis with underlying defects in the alternative pathway of complement cascade.It is characterized by predominant C3 deposition in glomeruli due to abnormal activation of the alternative pathway of complement system. C3 GN has been reported to be associated with several systemic diseases

The recurrence of glomerulonephritis (GN) is critical to the prognosis of long-term renal transplant graft survival.

We will describe a case presenting C3 GN in a patient with monoclonal gammopathy of renal significance (MGRS)

Case presentation

A 61 years old man patient presented with gross hematuria,anemia ,renal disfunction (creatinemia 2,4 mg/dl), proteinuria 814 mg/24 h.The patient was

transplanted two years ago and he was taking corticosteroids ,MMF,tacrolimus and entecavir for hepatitis B .Serum protein electrophoresis ; hypogammaglobulinemia with a small homogeneous spike-like peak. Serum Kappa free light chains 32,4 mg/dl ,serum Lambda free light chains 9.3 mg/dl.Ratio 3,4 . Autoimmune tests ANA ,ANCA,Anti ds DNA C3 and C4 were negative.Urine Kappa Light Chains 26,4 mg/24 h,urine Lambda Light Chains 6,6 mg/24h.Urine Kappa/Lambda ratio 4. After consultation with haematolgist results of bone narrow biopsy came for monoclonal gammopathy ,and FISH conclusion is presence of t(11,14)(q13,q32) which originated from IgH / CCND1 retraction and 1q21 acquisition.Renal biopsy is C3 glomerulopathy with mesengial and diffuse endocapillary proliferation under light microscope and diffuse deposition of C3 and no immunoglobulin under immunofluorescence microscope.

FIGURE 1

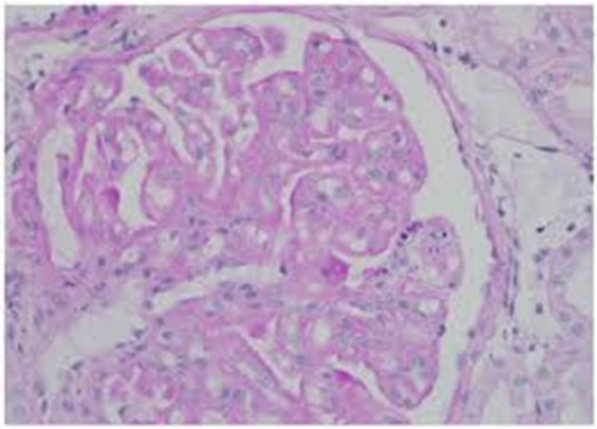
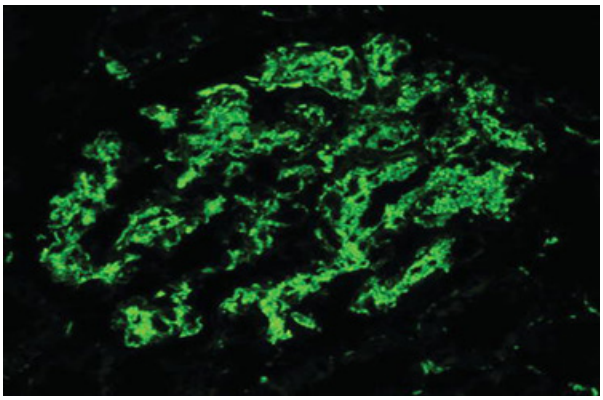


FIGURE 2



Pastmedical history

The patient was diagnosed with Membranous Glomerulonephritis associated with Hepatitis B virus infection in 2012. He has done in this time and Bone Marrow Biopsy, Serum and Urine Protein Electrophoresis, Imunoelectrophoresis ect - negative for MGUS.

In 2015 for the first time in Serum Protein Electrophoresis was detected a small spike, with hypogammaglobulinemia. in October 2017, underwent Renal Transplantation. Serum creatinin level after Renal Transplantation 1.6-1.9mg/dl, hemoglobin level 10.4-12 gr/dl,

Surgical History

October 2017 – Allogeneic kidney transplant.

Family History

No FH of cancer.

Social History

No smoking

No alkohol

Diagnosis:

MGUS IgG Kappa or Monoclonal Gammopathy of Renal Significance (C3glomerulopathy)

The patient is recommended the treatment according to the scheme VCD (CyBorD), 21 day cycle, maximum of 4 cycles and Autologous Hematopoietic Stem Cell Transplantation.

Conclusions

Monoclonal gammopathy of renal significance MGRS is a term to describe a group of haematological disorders associated with kidney disease that fail to meet the standard definitions for MM or lymphoma. In such cases, the renal impairment is often linked to the underlying haematological disorder. The intention was to make a clear distinction between MGUS , a benign asymptomatic condition, and MGRS, which may be associated with significant morbidity and mortality

The incidence of monoclonal gammopathy of undetermined significance (MGUS) increases with age, from 1% of people aged 25 years to > 5% of people > 70 years.

Diagnosis of MGUS is usually suspected when M-protein is incidentally detected in blood or urine during a routine examination. On laboratory evaluation, M-protein is present in low levels in serum (< 3 g/dL) or urine (< 200 mg/24 hours). MGUS is differentiated from malignant plasma cell disorders because M-protein levels are lower and lytic bone lesions, anemia, and renal dysfunction are absent. No antineoplastic treatment is recommended. However, recent studies suggest that MGUS patients with associated bone loss (osteopenia or osteoporosis) may benefit from treatment with intravenous bisphosphonates. Monoclonal gammopathy of renal significance (MGRS) represents a group of disorders in which a monoclonal immunoglobulin secreted by a nonmalignant or premalignant B cell or plasma cell clone causes renal damage. MGRS-associated kidney diseases encompass a wide spectrum of renal pathology and include such lesions as immunoglobulin-associated amyloidosis, the monoclonal immunoglobulin deposition diseases (MIDDs; light chain deposition disease, heavy chain deposition disease, and light and heavy chain deposition disease), proliferative glomerulonephritis with monoclonal immunoglobulin deposits (PGNMID), C3 glomerulopathy with monoclonal gammopathy, light chain proximal tubulopathy (Fanconi syndrome), and several others. Kidney disease associated with MGRSs is highly heterogeneous, which means that the renal biopsy is considered a key diagnostic test. However, the concomitant presence of kidney disease of another etiology may make the correct histological interpretation difficult in some cases and be a confounding factor.

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Anesthesia management in obstetric patients with positive COVID-19

MD. Amarilda Arapi
Anesthesia and Intensive Care Unit, 'Mother Teresa'
University Hospital Center
Amarildaarapi@yahoo.com

MD.Emiljana Toslluku
Anesthesia and Intensive Care Unit, 'Villa Alba' Hospital,
Durres
emi@toslluku.al

Abstract
The COVID-19 pandemic, is an ongoing pandemic caused by corona virus.It can lead to severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).As of 9 March 2021, more than 117 million cases have been confirmed, with more than 2.6 million deaths attributed to COVID-19, making it one of the deadliest pandemics in history. As the pandemic evolves rapidly, there are data emerging to suggest that pregnant women diagnosed as having coronavirus disease 2019 can have severe morbidities (up to 9%). The aim of this article is to bring attention to all steps that should be followed in obstetric patients with positive COVID-19.

This is a litterature review, refering to international guidelines and international collegues experiences , especially from Wuhan and USA.

In contrast to earlier data that showed good maternal and neonatal outcomes, the latest data suggest that pregnant woman can have severe morbidities. Exposure to virus predisposes both mother and fetus to an increased risk of infection and severe adverse maternal and perinatal outcomes.

The anesthesia management of the patient with a suspected or confirmed COVID-19 infection presents a major challenge for anesthesia professionals because of the pathophysiologic and confirmed rapid human-to- human

transmission of the virus through symptomatic and asymptomatic carriers. As with SARS and MERS, the most critical goal in the OR is to prevent cross-contamination by implementing stringent anesthesia guidelines and infection control strategies in the perioperative setting.

Pregnant women with suspected or confirmed COVID-19 should be triaged and their condition categorized as mild, severe, or critical. Asymptomatic and mild cases should be isolated at home, and be taken care throw all the process until the day of the delivery.

Severe and MOF patients should be taken care in the hospital by a multidisiplinary group.Vaginal delivery is recommended in stable patients because viral shedding and vertical transmission have not been reported. There are international recommendation starting to continuous CTG monitoring due to possible increased risk of fetal distress, monitor temperature, respiratory rate. Under normal labor progression, vaginal examinations should be minimized. Neuraxial analgesia is not contraindicated, and by providing good analgesia, it may reduce cardiopulmonary stress from pain and anxiety. Although evidence of mother-to-child transmission is lacking, early cord clamping may be discussed with the patient. The patient could informedly decide skin-to-skin contact with the newborn , ensuring precautions for respiratory droplets with the use of a mask as well as hand and skin hygiene. Caesarean section should follow usual obstetric indications. The potential risk of vertical transmission is not an indication for caesarean section. Because of pulmonary complication known in COVID-19, the regional anesthesia is recommended unless there are no contraindication. Before neuraxial anesthesia must be done blood count test, especially to asses the platelet count. If general anesthesia is required , the anesthesia machine must be prepared with an HMEF between the circuit and the patient's airway. The most experienced anesthesia provider should be dedicated to the intubation. The anesthetist should manage the pain, preferably with NSAIDS , the PONV using antiemetics and VTE prophylaxis. COVID-19 is highly contagious, and this must be taken into consideration when planning intrapartum care. Rational use of personal protective equipment is key in preventing infection in attending professionals. The first of all is " Primum non nocere", it should be done the best for the pregnant patient and for the newborn protecting the personnel.

There are still limited data on the care and management of the parturient with COVID-19. It is paramount that our profession shares our experiences and practices to help guide our multidisciplinary approach in delivering the best care possible to these women.

Key words: COVID -19, obstetric patient, anesthesia, cesarean delivery, neuroaxial block, PPE (Personal Protective Equipment), HMEF (Heat and Moisture Exchanger Filter)

Introduction

The **COVID-19 pandemic**, is an ongoing pandemic caused by corona virus. It can lead to severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). It was first identified in December 2019 in Wuhan, China. The World Health Organization declared the outbreak a Public Health Emergency of International Concern in January 2020 and a pandemic in March 2020. As of 9 March 2021, more than 117 million cases have been confirmed, with more than 2.6 million deaths attributed to COVID-19, making it one of the deadliest pandemics in history.[1]

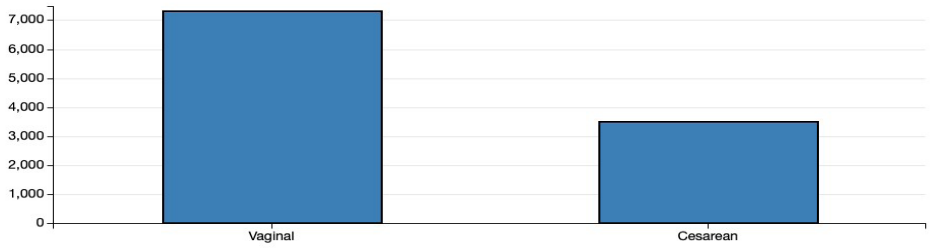
As the pandemic evolves rapidly, there are data emerging to suggest that pregnant women diagnosed as having coronavirus disease 2019 can have severe morbidities (up to 9%). This is in contrast to earlier data that showed good maternal and neonatal outcomes.[4]

Recent investigations from Sweden and the US have indicated that pregnant and postpartum women are at increased risk of severe complications associated with COVID-19.[2]

- According to CDC (Centers for Disease Control and Prevention) data from March 29, 2020-February 10, 2021, for 20 jurisdiction, total woman with completed pregnancies are 11764! 7279 of them had vaginal delivery and

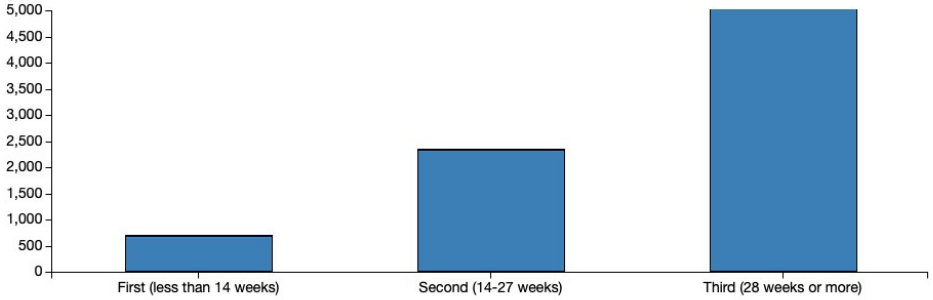
3492 cesarean delivery. The information presented below in graphics.[3] Refering these data, and the fact that , 30% of delivery are cesarean delivery, so we find it necessary to bring a litterature review for management of anesthesia in obstetrics patient with COVID-19 positive. It was difficult collecting information because of lack of data, as we know COVID -19 is a new challenge for all of us.

Data were collected for 11,964 birth outcomes, but delivery type was only available for 10,771 outcomes >20 weeks gestation (90%).



Data Table

	Vaginal	Cesarean
Delivery type	7,279	3,492



Data Table

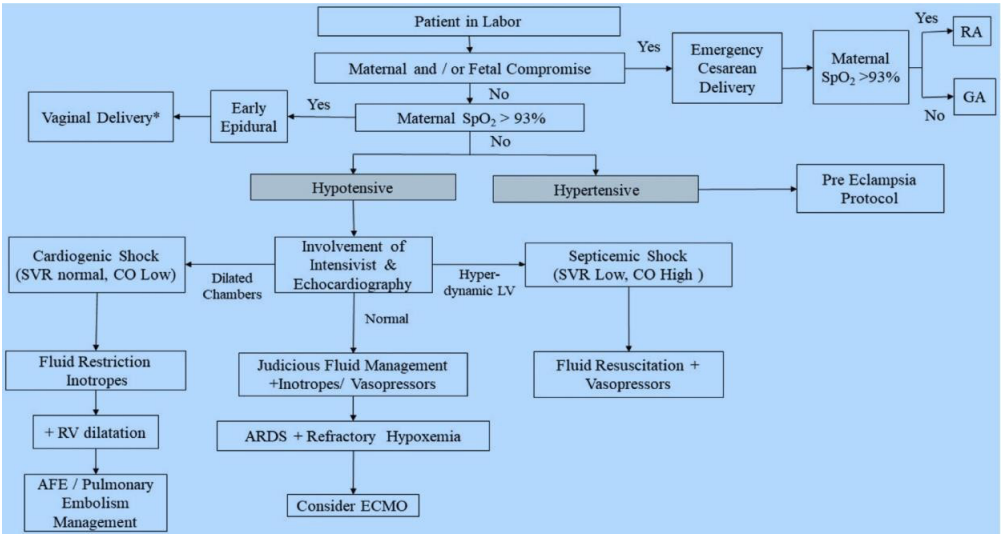
	First (less than 14 weeks)	Second (14-27 weeks)	Third (28 weeks or more)
Trimester of infection	693	2,337	7,186

The management of a pregnant woman is carried out by a team of professionals under the international guidelines. The American Journal of Obstetrics and Gynecologist recomend the guideline below:[8]

Exposure to virus predisposes both the mother and fetus to an increased risk of infection and severe adverse maternal and perinatal outcomes.[5] The physiologic and immunologic changes during pregnancy increase maternal morbidity and mortality.[6]Our knowledge of the epidemiology, pathogenesis, disease progression, and clinical course of COVID-19 is continually changing as more information and evidence emerge. Unfortunatly , there are known maternal deaths of patients with COVID-19 due to respiratory complications after delivery. We have maternal deaths in Albania too, but we have lack of official data to consult.

The anesthesia management of the patient with a suspected or confirmed COVID-

19 infection presents a major challenge for anesthesia professionals because of the pathophysiologic and confirmed rapid human-to- human transmission of the virus through symptomatic and asymptomatic carriers. As with SARS and MERS, the most critical goal in the OR is to prevent cross-contamination by implementing stringent anesthesia guidelines and infection control strategies in the perioperative setting (Table 4). The American Association of Nurse Anesthetists (AANA) published an infographic highlight- ing anesthesia considerations in managing patients with COVID-19 infections.[7]



Perioperative phase	Clinical considerations/management of obstetric patients with COVID-19
Prehospital admission	• Conduct phone screening before appointment. • If patient is asymptomatic for COVID-19, proceed with routine prenatal care. • Perform severity assessment if patient presents in clinic with symptoms. • For COVID-19 testing, prioritize patients with suspected COVID-19 or those who have signs and symptoms suggestive of COVID-19.
Preoperative	• Isolate patient in negative pressure room. • All healthcare providers involved in care should wear gown, gloves, N95 mask, and face shield (per hospital protocol). • Patient should wear a surgical mask. • Use hospital's adopted checklist for donning appropriate PPE. If possible, obtain an observer. • Order routine laboratory studies and encourage neuraxial anesthesia in absence of thrombocytopenia. • Avoid general anesthesia to mitigate the risks involved in aerosol-generating procedure. • Prepare COVID-19 OR kit to avoid contaminating medication station (uterotonic agents, vasopressors, narcotics for intrathecal administration, and antiemetics). • Dedicate an OR for patients with COVID-19, to minimize contaminating surfaces. • Alert necessary staff for backup coverage and assign a runner to retrieve supplies or help if needed.
Intraoperative	• Use of spinal anesthesia is not contraindicated for patients with COVID-19 and should be the preferred method of anesthesia for these patients. • Follow standard precautions when placing neuraxial anesthetic. • Avoid excessive or deep sedation to reduce need for any airway manipulation or instrumentation. • Patient should wear a surgical mask at all times throughout procedure to minimize viral spread. • If general anesthesia is indicated, all personnel in OR at time of intubation should wear PPE for airborne precautions. • Minimize OR to only essential personnel during intubation. • Preoxygenation should occur with a breathing circuit extension and high-quality filter at the patient side of the circuit. • Maximize chance of first-pass intubation by having experienced providers manage airway. • Use video laryngoscopy if able. • During extubation, which has a high risk of aerosolization of the virus, minimize personnel in OR and be sure every healthcare worker is protected with proper PPE. • The patient should be monitored in OR until safe and before transfer to a COVID-19–designated room following hospital guidelines.
Postoperative	• Use of NSAIDs in the intraoperative and postoperative periods lacks sufficient evidence. It is unknown if the treatment of postpartum pain with NSAIDs will worsen the trajectory of patients with COVID-19.

- Administer antiemetics to prevent vomiting in patients undergoing cesarean delivery because gagging and vomiting are considered aerosolization events.
- Because of potential risks of immunosuppression with corticosteroid use, avoid use of dexamethasone in this patient population for PONV prophylaxis and treatment.
- Healthcare facilities providing inpatient obstetric care should limit visitors to those essential for the pregnant woman's care.
- Encourage use of communication techniques that avoid person-to-person contact, such as phone calls and videoconference calls.

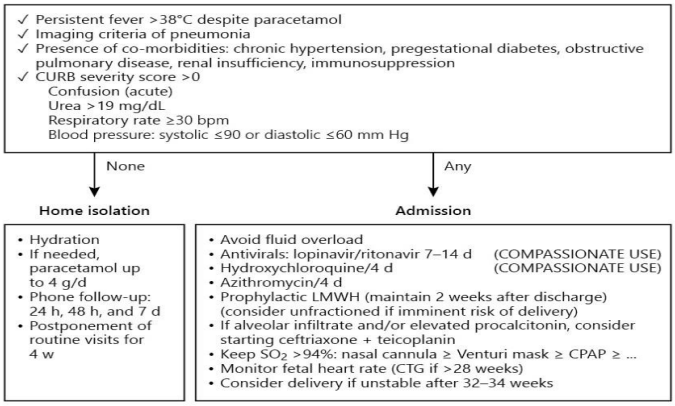
Pregnant women with covid 19 positive

Considerating the signs, symptoms, and the stade of the corona disease, pregnant women can have different outcomes, and different therapies.

Pregnant women with suspected or confirmed COVID-19 should be triaged and their condition categorized as mild, severe, or critical.

- Liang and Acharya [10] classified a symptomatic patient with stable vital signs as having a mild case of COVID-19. Presence of local symptoms in the upper respiratory tract (cough, sore throat,rhinorhea, anosmia with or without non specific symptoms like fever or myalgia.
- Pregnant patients with moderate pneumonia, confirmed with x ray, without presentin severety signs(basal SO2 >= 90, no need for vassopresor or ventilatory assistance.
- Pregnant patients with tachypnea and hypoxemia expressed as a partial pressure of arterial blood oxygen /oxygen concentration ratio less than or equal to 300 mm Hg are considered to have severe cases.
- Moreover, pregnant women present- ing with shock and multiorgan system failure requiring mechanical ventilation have critical cases

Asymptomatic and mild cases shoud be isolated at home, and be taken care throw all the process untill the day of the delivery Severe and MOF patients should be taken care in the hospital by a multidisiplinary group.



Anesthetic management of obstetric patient with CVID-19 positive

Vaginal delivery

Vaginal delivery is recommended in stable patients because viral shedding and vertical transmission have not been reported.[1]

- Continuous CTG monitoring is advised due to possible increased risk of fetal distress, as reported in some early reports. Although there is no evidence on the presence of SARS-CoV-2 in vaginal secretions. It seems reasonable to avoid fetal scalp pH testing or internal fetal heart rate monitoring. If fetal well-being loss is suspected, immediate delivery of pregnancy by the most appropriate mode of delivery according to obstetric conditions will be decided.
- Monitor temperature, respiratory rate, and SO2 hourly.
- Under normal labor progression, vaginal examinations should be minimized (i.e., every 2–4 h). Ideally, a minimal number of professionals should be involved in labour management to minimize the risk of professional exposure.
- Neuraxial analgesia is not contraindicated, and by providing good analgesia, it may reduce cardiopulmonary stress from pain and anxiety. Preferably, it should be administered early to minimize the risk of requiring general anesthesia for an emergency caesarean section, as airway manipulation, intubation, and extubation are high-risk procedures for personel infection. Some societies recommend against the use of nitrous oxide because of the risk of aerosol generation .
- Consider shortening the second stage of labour (forceps or vacuum) according to obstetric criteria as active pushing while wearing a surgical mask may be difficult for the woman.
- Unless indicated for suspected fetal or neonatal distress, routine umbilical cord gas analysis is avoidable.
- Allowing people support on labour and delivery is a controversial issue, mainly because in most of the situations, they are close contacts. In any case, the support person should be screened for symptoms before admission to the delivery room, wearing appropriate protective equipment (at least a surgical mask) and keeping droplet and contact isolation measures.
- Any generated material during labour should be treated as contaminated. This includes biological samples (such as the placenta) and other potential fomites such as neonatal finger- or footprints or CTG strips. As a general rule, their reduction is desirable. During the COVID-19 pandemic, the placenta should not be handed over to the patient.
- Newborn care should be carried out in the same operating/labour room unless resuscitation measures are required that can not be provided in-room.
- Although evidence of mother-to-child transmission is lacking, early cord clamping may be discussed with the patient and recommended to minimize the

risk of transmission after 34 weeks of gestational age. Before 34 weeks, a risk-benefit decision should be made regarding delayed clamping.

- The patient could informedly decide skin-to-skin contact with the newborn .This can only be offered if a good mother-child placement can be ensured, and in asymptomatic newborns >34 weeks, ensuring precautions for respiratory droplets with the use of a mask as well as hand and skin hygiene.

Caesarean Delivery

- Caesarean section should follow usual obstetric indications. The potential risk of vertical transmission is not an indication for caesarean section.
- Maternal indication: in women with respiratory compromise, labour may stress the pulmonary situation, and maternal hypoxia also has fetal risks. Under this rationale, a caesarean section could be considered after 32–34 weeks in women with severe illness, when the risks of prematurity could be assumed. Before 32 weeks, multidisciplinary team decisions should be

made, balancing maternal and neonatal risks, especially in intubated patients

or those with need for maternal prone position due to acute respiratory distress syndrome . Continuing maternal support with fetal monitoring in women that remain stable may be an option for severe preterm cases.

If cesarean delivery is necessary, surgery must be performed in a designated negative pressure OR, and regional anesthesia is recommended.

Because of pulmonary complication knowing in COVID-19, the regional anesthesia is recommended unless there are no contraindication. Before neuroaxial anesthesia must be done one blood symple test, especially to asses the platelet count. Recent studies, like Guan and colleagues[13] and Lippi et al[14] reported

decrease in platelet counts or thrombocytopenia in patients with severe COVID -19 symptoms.

Nevertheless, if general anesthesia is required , the anesthesia machine must be prepared with an HMEF between the circuit and the patient's airway. It can be used two additional high quality filters on expiratory and inspiratory limbs.

The most experienced anesthesia provider should be dedicated to the intubation of a patient with COVID-19. It might be necessary to have a colleague available for assistance, whether inside the OR or immediately available outside the room.[15]

It should be performed preoxygenation and rapid-sequence induction. Videolaryngoscopy is recommended ,but it must be choose the least amount time method to minimise time exposition.

Extubation in the OR must be done with limited personnel present, and must be followed imediatly by putting a face mask on the patient.

Adequate time must be spent in the OR before transport to ensure the patient is exchanging air without distress and has respiratory stability.

After surgery, the breathing circuit,reservoir bag , gas sampling tubing and the mask must be discard.

All exposed area must be cleaned and disinfected according to recommendations. Cleaning of internal parts of the machine is not necessary if appropriate high-quality filters were used based on the design of the anesthesia machine.[16]

Pain management

If the epidural catheter is placed, it can be applied an analgesic dose. In other cases, without epidural catheter, it can be use NSAIDs, there is lack of evidence, if the NSAIDs postpartum treatment will worse the trajectory of disease from COVID-19

PONV prophylaxis

Patients with COVID-19 can be immunosuppressed because of corticosteroid use, and it is better to avoid use of dexamethasone for PONV prophylaxis. It should be administer antiemetics to prevent vomiting. It is necessary using antiemetics to reduce gagging and vomiting, which are considered aerosolization events.

Venous Thromboembolism Prophylaxis

There are no data on the use of scoring systems to predict VTE risk in pregnant individuals. Additionally, during pregnancy, the D-dimer level may not be a reliable predictor of VTE because there is a physiologic increase of D-dimer levels throughout gestation.[19]

If delivery is threatened, or if there are other risks for bleeding, the risk of bleeding may outweigh the potential benefit of VTE prophylaxis in pregnancy.

Specific recommendations for pregnant or lactating individuals with COVID-19 include:[18]

- If antithrombotic therapy is prescribed during pregnancy prior to a diagnosis of COVID-19, this therapy should be continued (AIII).
- For pregnant patients hospitalized for severe COVID-19, prophylactic dose anticoagulation is recommended unless contraindicated (BIII).
- Like for nonpregnant patients, VTE prophylaxis after hospital discharge is not recommended for pregnant patients (AIII). Decisions to continue VTE prophylaxis in the pregnant or postpartum patient should be individualized, considering concomitant VTE risk factors.
- Anticoagulation therapy use during labor and delivery requires specialized care and planning. It should be managed in pregnant patients with COVID-19 in a similar way as in pregnant patients with other conditions that require anticoagulation in pregnancy (AIII).

- Unfractionated heparin, low molecular weight heparin, and warfarin do not accumulate in breast milk and do not induce an anticoagulant effect in the newborn; therefore, they can be used by breastfeeding women with or without COVID-19 who require VTE prophylaxis or treatment (AIII). In contrast, use of direct-acting oral anticoagulants during pregnancy is not routinely recommended due to lack of safety data (AIII).

(Rating of Recommendations: A = Strong; B = Moderate; C = Optional
III = Expert opinion)

Personnel Protection

The SARS coronavirus 2 (SARS-CoV-2) caused by COVID-19 corona virus has been found to be highly virulent and can be transmitted through droplets from normal breathing, sneezing, and coughing, and by aerosolization of bodily fluid discharge. The first and maybe the most important to do, is to protect the personel. It is necessary to follow rigorously the steps for wear and unwear the PPE

(Personal Protective Equipment). Once admitted to the labor and delivery department,the patient with COVID-19 must be placed in a negative pressure room

and must be provided a face mask. All personnel with direct contact with the

patient must have PPE, which include gloves, gown, mask, and face shield during the first and second stages of labor. Visitation of family members during labor and delivery is prohibited.[11]

Consistent with strict anesthesia management in cesarean delivery is the effective use of personnel. Regardless of the type of cesarean delivery, the current recommendation outlines the use of the most experienced provider performing procedures such as subarachnoid blocks or intubations. Furthermore, the Society for Obstetric Anesthesia and Perinatology suggests that the anesthesia department minimize the use of trainees in the room of a patient with COVID-19.[9]

Conclusion and recommendation

Pregnant women do not appear to be more susceptible to infection or to serious complications compared to non-pregnant women, but the existing data are stilllimited, and sizable series are scarce. Presence of co-morbidities may increase the risk of presenting with more severe clinical manifestations.

Current data do not suggest an increased risk of miscarriage or early pregnancy loss in pregnant women with COVID-19. At third trimester, cases of preterm

delivery and fetal distress have been described in women with COVID-19 infection, although the evidence is still too weak to establish an association. A significant number of preterm deliveries are due to maternal indication.

Women with mild symptoms without co-morbidities could be safely isolated at home and followed up by telehealth means.

Early identification of cases with serious manifestations allows timely treatment, oxygen support, and referral to the intermediate or intensive care. It should be noted that COVID-19 patients may have sudden clinical deterioration.

In pregnant women with COVID-19 infection without severity criteria with spontaneous-onset delivery or with an indication of induction due to obstetric conditions, the mode of delivery should be based on obstetric conditions and fetal status. Caesarean section should follow usual obstetric indications.

COVID-19 is highly contagious, and this must be taken into consideration when planning intrapartum care. Rational use of personal protective equipment is key in preventing infection in attending professionals.

Ther e ar e s ti l l l i m it ed dat a on t he car e and m anagem ent of t he part uri ent wi t h COVI D- 19. I t i s par am ount t hat our pr ofes si on share s our e xperi ence s and pr act i ces t o hel p gui de our m ul ti di sci pli nary appr oach i n deli ve r i ng t he best car e pos s i bl e t o t hes e wom en. Eve r y healt h c ar e inst i t ut i on acr os s t he wor l d has bee n wor ki ng di l i gent ly t o educat e it s em pl oye es on t he cur r ent rec om - m endati ons t hat com pl y wi t h t he CDC and ot her nat i onal or gani z at i ons t hat we r ef er ence f or our pr act i ce. Not onl y is t he care of pati ent s wi t h COVI D - 19 cont i nual l y changi ng, but al s o s o ar e t he s af et y pr ec autions t hat t he anes t hes i apr ovi derm ustt ake.Ournat i onal s oci et ies have done an exc el l ent j ob of educat i ng us wi t h t he m ost r ecent 45updat es , s uch as on PPE, t o ens ure t hat we ar e pr ovi di ng *s af e anes t hes i a car e as wel l as kee pi ng our sel ve s s af e.*

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Review on the Importance of the Routine Measurement of Calcium in Individuals Engaged in Sports

Phd. Klotilda Vrenjo
Sports University of Tirana, Faculty of Movement Sciences
Email: kvrenjo@ust.edu.al

Phd. Oltiana Petri
Sports University of Tirana, Faculty of Rehabilitation Sciences

Phd. Esmeralda Thoma
Sports University of Tirana, Faculty of Technical Medical Sciences

Abstract

Hypocalcemia is one of the major health problems worldwide, as it causes a variety of diseases in the population such as Osteoporosis, Multiple Sclerosis, Renal diseases, Early breast cancer, etc. In Albania there is a lack of checkups for any age group or category, as these checks are not provided for free by the state, but more importantly, people are not informed that there are important health examinations that must be carried out as early as possible, possibly since childhood, in order to be healthy adults in the future. Consequently, a great deal of work is needed to identify, as well as to draft national strategies to optimize consumption, as well as to set up a national database of adult calcium intake. This needs to be done simultaneously even for Mg, Na, K, and vitamin D.

Keywords: hypocalcemia, adult, athlete, dietary calcium intake, dosage, Osteoporosis

Introduction

Calcium is one of the most abundant electrolytes in the body, and levels are tightly controlled by parathyroid hormone and vitamin D. Calcium is essential for cell function, cell membrane stability, neuronal transmission, bone physiology, blood homeostasis, and cell signaling.

Circulating calcium levels are impaired by several factors, but hypocalcemia is mainly secondary to the imbalance of calcium absorption, excretion, and distribution.

Hypocalcemia is defined as a total calcium level of less than 4.6 mg / dl in the blood serum. Hypocalcemia is accompanied with a number of diseases and these become more serious in people who engage in physical activity or sport causing fatigue and reducing muscle strength in them. Hypocalcemia causes bone breakdown and reduces bone strength, the bones become brittle and are more prone to breaking, increasing the risk of sports injury and early osteoporosis in sportspeople. Hypocalcemia reduces muscle strength in sportspeople, thus affecting their performance during training and competitions.

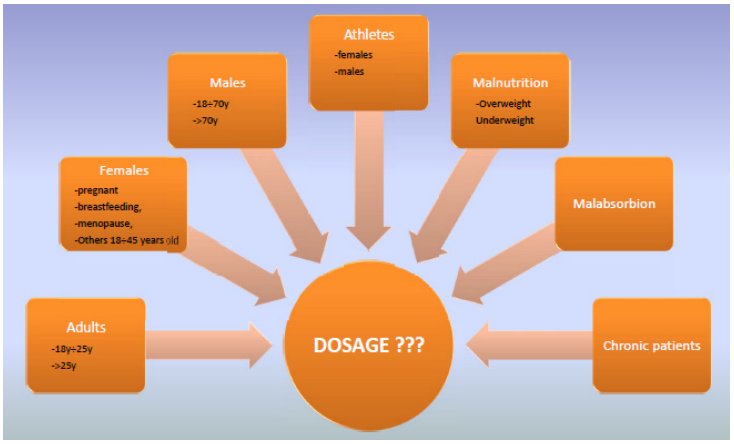
This viewpoint is based on study "**The importance of the measurement of functional and clinical parameters in athlete students and students engaged in physical activity**". I am focused on this issue, and specifically on the category of people who engage in moderate physical activity, for several reasons which are as follows:

- Physiologically they consume more calcium daily, because in sport there are no resting days;
- Climatic conditions are changing, so changes the daily intake of D vitamin from sun rays source
- Albania lacks sports physicians;
- Also in the first study we found out that these parameters were not measured in sports students, i.e. raising their awareness is important for their health as future health promoters

Conclusions and future instructions

In this brief review, it is discussed the importance of calcium in the human body and the problems that its deficiency causes in individuals, especially in athletes. Aiming to find solutions for the general population and for athletes in particular, I propose that: given the enormous health and financial benefits that can come from early detection of calcium deficiency, long-term prospective cohort studies

are needed to investigate dietary intake and optimal dosing of calcium via oral supplements as well as vitamin D and magnesium supplements if the deficiency is present (during and after bone mineralization), this dosing based on age, gender or socioeconomic and health status. More work is also needed to identify national strategies to optimize consumption as well as to create the national database of adult dietary calcium intake.



Also for persons involved in sports i propose:

- Cohort studies by the UST or sports associations regarding the replacement of Calcium deficiency at an early age especially at 18-25 years which may lead to the avoidance of Hypocalcaemia-causing diseases,
- Routine measurement (each 6 months or 1 / year) of electrolytes,
- Daily consumption of foods containing Ca.

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SOURCE: https://bit.ly/2SZc1bD Journal of Clinical Sports Medicine, online February 24, 2020.Reuters Health Information © 2020 Cite this: 'Electrolyte' Drinks Don't Assure Healthy Sodium Levels in Endurance Athletes - *Medscape* - Feb 26, 2020.

Global dietary calcium intake among adults: a systematic review E. M. Balk[1] & G. P. Adam[1] & V. N. Langberg[1] & A. Earley[2] & P. Clark[3] & P. R. Ebeling[4] & A. Mithal[5] & R. Rizzoli[6] & C. A. F. Zerbini[7] & D. D. Pierroz[8] & B. Dawson-Hughes[9] & for the International Osteoporosis Foundation Calcium Steering Committee

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Essential Role of Serum Calcium for Muscle Strength in Football Athletes Yusni[1]*, Amiruddin[2], A Purba[3], and B Tarigan[4]

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Phd.Klotilda Vrenjo[1] The Importance Of The Measurement Of Functional And Clinical Parameters In Athlete Students And Students Engaged In Physical Activity,page 38.

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Low Back Pain Diagnostic Approach

Leonard Molla
"Gledis" Pharmacy, Tirana

Krenar Preza
Continental Hospital, Tirana

Artan Simaku
Institute of Public Health, Tirana

Abstract

Low back pain is one of the leading causes of primary care and emergency room visits and job-related disability in many countries [1]. Back pain is sorted into three categories, differentiated by the duration of symptoms. Acute back pain, which is the focus of this article, is classified as pain lasting 6 weeks or less, subacute back pain is pain that has been present between 6 and 12 weeks, and chronic back pain is pain that persists longer than 12 weeks. Etiologies of low back pain include (but are certainly not limited to) mechanical injury (e.g., muscle sprain or spasm, ligament strain, facet joint disruption), arthritis, sciatica (lumbar radiculopathy), spinal fracture, malignancy, connective tissue disease, infection (e.g., vertebral osteomyelitis, epidural abscess), cauda equina syndrome, metabolic causes (e.g., hyperparathyroidism), abdominal or retroperitoneal visceral or vascular processes, psychogenic pain, and malingering. Careful history-taking and physical examination are crucial to diagnosing the etiology of back pain. This review presents the current state of science regarding the diagnosis and treatment of low back pain.

Key words: low back pain, etiology, diagnosis, treatment

Introduction

The patient in with low back pain is experiencing sciatica, pain that originates in the lower back and radiates down the lateral or posterior thigh and occasionally to the ankle or foot (1,2). It may be associated with weakness, numbness and/or tingling in the affected leg. It is caused by injury to or compression of the sciatic nerve, which is formed by the nerve roots of L4, L5, S1, S2, and S3 (3-7). It is important to understand that sciatica is a symptom, not a medical condition in its own right. Common causes of sciatica include herniated discs, degenerative disc disease, spinal stenosis, piriformis syndrome, pelvic injury or fracture, and tumors.

How is it diagnosed?

The diagnostic process is mainly focused on the triage of patients with specific or non-specific low back pain. Specific low back pain is defined as symptoms caused by a specific pathophysiological mechanism, such as hernia nuclei pulposi, infection, osteoporosis, rheumatoid arthritis, fracture, or tumour.

During history taking and physical examination for lower back pain and particularly sciatica, it is important to look for clues to the cause. Red flags in the patient's history include past cancer, fever, unexplained weight loss, immunosuppression, extended use of steroids, intravenous drug use, urinary tract symptoms, trauma, and bowel or bladder incontinence or retention. Physical findings that are cause for concern include decreased or loss of anal sphincter tone, saddle anesthesia, significant motor weakness, vertebral tenderness, and persistent or worsening neurological symptoms (8). The presence or absence of these red flags dictate whether further workup is warranted. Three types of imaging modalities can be used to further elucidate the diagnosis of back pain: plain radiographs (x-rays), computed tomography (CT), and magnetic resonance imaging (MRI). Plain radiographs consist of anteroposterior and lateral lumbosacral spine views. Pelvic and hip x-rays may be considered if it is felt the pain may be referred from the hip or pelvis. Plain films can show evidence of fracture, malignancy, spondylolisthesis, degenerative changes, disc space narrowing, infection, and prior surgery. They do not assess discs, ligaments, nerve roots, epidural fat, or the spinal canal. Also, the sensitivity of plain films for detecting malignancies and infections is subpar (9). Use of plain films is generally limited to cases of recent significant trauma, recent mild trauma in a patient over age 50, a history of prolonged glucocorticoid use or osteoporosis, or cases in which the patient is more than 70 years old. CT and MRI scans of the lumbosacral spine are more sensitive than plain films but are

only indicated for patients with acute back pain if clinical findings suggest possible emergent conditions affecting the spine, including cauda equina syndrome, infection, fracture with neurologic compression, acute radiculopathy with progressive neurologic deficits, and tumors. CT is superior to MRI for revealing bony abnormalities (e.g., sacroiliac joint disease, fractures) and may be particularly useful for further elucidation when plain films are abnormal or inconclusive in the setting of recent trauma. However, MRI is preferred to CT because it provides better visualization of nonbony structures (e.g., discs, nerves) and does not subject patients to radiation (the radiation exposure from a lumbosacral CT can be more than 10 times as high as that from a plain film) (10). Choice of imaging modality may also be affected by contraindications to MRI (e.g., metal implants) and MRI availability.

There are reasons to think twice before performing any imaging on a patient who has acute low back pain and no red flags. First, and most importantly, the vast majority of cases of acute low back pain are mechanical or nonpathological; less than 5 percent of acute low back pain cases are due to serious systemic pathology (11). Secondly, up to 90 percent of patients with acute lower back pain recover within 2 weeks (12). Given the rapid resolution of most back pain cases, early imaging may expose patients to unwarranted radiation and risk of malignancy.

Thirdly, radiographic findings do not necessarily correlate with patients' symptoms or presentation. Treating patients based on the radiographic findings alone may lead to unnecessary interventions, health care expenses, and patient anxiety. For example, research has shown that as many as 60 percent of people without back symptoms have disk bulges and protrusions on MRI (13). Lastly, early imaging in cases of acute low back pain where no sign of serious etiology is present has not been shown to improve outcome or patient satisfaction. One study showed that depiction of stenosis, nerve root compression, or both on MRI in the first 48 hours after onset of acute radicular back pain did not affect the outcome after 6 weeks of conservative management (14). Other research has shown that MRI evaluation to provide reassurance does not lead to better prognosis (15) and that patient awareness of imaging findings does not affect the outcome and is associated with a reduced sense of well-being for the patient (16). A review of predictive studies of acute low back pain revealed that psychosocial variables (e.g., coping behaviors, psychiatric comorbidities) are much stronger predictors of long-term disability than radiographic findings (17). The bottom line is that 80 percent of adults seek care at some point for acute low back pain (18) and, in the large majority of cases, the pain typically resolves with conservative management. To order MRIs (or other imaging) for every patient who comes in with acute back pain is a superfluous use of precious health care resources and money. The most reasonable approach, in the absence of red flags, is conservative management;

imaging should only be considered if the patient does not improve as expected or if red flags subsequently appear. It is also extremely important to take the time to explain the diagnosis, treatment, and expected management plan to patients. Studies have shown that patients who feel that they have been given a sufficient explanation for the etiology of their problem are less likely to request diagnostic tests and more likely to be satisfied with the visit (19, 20). Reassurance is key.

What is the prognosis?

In general, the clinical course of an episode of acute low back pain seems favourable, and most pain and related disability will resolve within a couple of weeks (21) This is also illustrated by the finding that about 90% of patients with low back pain in primary care will have

stopped consulting their doctor within three months. Researchers suggested that in many patients low back pain symptoms fluctuate over time (22). Most patients with back pain will have experienced a previous episode, and acute attacks often occur as exacerbations of chronic low back pain. So recurrences are common. Also, researchers have estimated the cumulative risk of at least one recurrence within a 12 month period to be 73% (95% confidence interval 59% to 88%) (23). The severity of these recurrences, however, is usually less and does not always lead to a new visit to the general practitioner. Only a small proportion (5%) of people with an acute episode of low back pain develop chronic low back pain and related disability.

How effective are treatments in acute low back pain?

The evidence that non-steroidal anti-inflammatory drugs relieve pain better than placebo is strong. Advice to stay active speeds up recovery and reduces chronic disability. Muscle relaxants relieve pain more than placebo, strong evidence also shows, but side effects such

as drowsiness may occur. Conversely, strong evidence shows that bed rest and specific back exercises (strengthening, flexibility, stretching, flexion, and extension exercises) are not effective. These interventions mentioned were equally as effective as a variety of placebo, sham, or as no treatment at all. Moderate evidence shows that spinal manipulation, behavioural

treatment, and multidisciplinary treatment (for subacute low back pain) are effective for pain relief. Finally, no evidence shows that other interventions (for example, lumbar supports, traction, massage, or acupuncture) are effective for acute low back pain (24).

Concluding remarks

LBP is one of the most common symptoms and conditions motivating individuals to seek medical consultation. The effects of back pain on society are significant, both epidemiologically

and economically, and this is likely to only further increase owing to a combination of shifting attitudes and expectations, medical management techniques, and social provision. Hence, LBP must always be addressed as a complex disease in which it is mandatory that an accurate diagnosis of pain generators is determined before starting any treatment. All the guidelines currently avalaible stress the importance of a multimodal and

multidisciplinary approach in order to determine a strategy to solve the problem and not simply alleviate symptomatic pain. Finally, a careful follow up is important to adapt our therapeuthic strategies to dynamic clinical manifestations of CLBP.

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Prevalence of non-specific Low back pain on physiotherapy students

Msc. Kristi Cela
Faculty of Medical Technical Sciences
European University of Tirana

Abstract

Introduction: The prevalence and incidence of LBP is unchangable almost every year worldwide, being described as a pain that causes instability and inability to work, disrupts the quality of life and the reason for more frequent medical visits.

The purpose of this study:The purpose of this study is to indetify and study the prevalence of nonspecific Low Back Pain among the Physical Therapy students of the Faculty of Technical Medical Science in the University of Medicine Tirana .

Methodology : This is a Cross-sectional study. This study included 80 students (73 females and 7 males) of the Physical Therapy on their Science Master Degree , first year (n=42) and second year (n=38). Students filled a questionnaire and to be participants on this study they must furfill some criteria defined by the study.

Results :By the end of the study was discovered that the prevalence of nonspecific Low Back Pain among students was 73% . The mean value of pain intensity according to Visual Analogue Scale was 3.77. Where 36% of the subjects exprerienced a mild pain, 55% e moderated pain and 9% a severe pain. Disability according to the Oswestry Disability Index was 19% (minimal disability)

Conclusions

In conclusion according to this study Physical Therapy students in Albania have a high prevalence of Low Back Pain among them. Low Back Pain can be an ocupational risk and may cause disability on this student group. Risk factors and the causes of Low Back Pain remain to be studied.

Keywords: Low Back Pain , Students , Physical Therapy , Prevalence , Pain intensity, Disability

Introduction

In literature Low Back Pain is described as a pain, muscle tension or stiffness below the rib arch and above the inferior gluteal area, accompanied or not by thigh pain (1).

Low Back Pain presents three subtypes based on the time of onset, their duration and the characteristics of the symptoms:

- Chronic Low Back Pain, is defined as pain that persists for more than 7-12 weeks.

-Low Acute Back Pain, is defined as pain that persists for a period of less than 7 weeks.

-Low Back Pain Subacute, pain with a time extension from 6 weeks to 3 months. (2)

Nonspecific LBP is defined as pain which does not come from organic pathologies such as tumors, infections, traumas, spondylolisthesis, rheumatic spine diseases and which has a definite cause, its diagnosis is achieved by exclusionary diagnoses. 90% of patients with Low Back Pain are from non-specific causes. (3)

Epidemiology

The probability that an individual will experience at least one episode of Low Back Pain during his lifetime is 6: 1, and even the data show that it is impossible for any individual to avoid such an episode during his lifetime. (4) The point prevalence of non-specific LBP is estimated to be 25%, the annual 50% and the vital prevalence 85%. These data are not limited to developing countries and do not depend on gender, age or other characteristics of the individual but vary on the basis of occupation commitment. The incidence of LBP peaks in adulthood with symptoms that tend to increase over time (5). Symptoms appear in adolescence reaching a peak around the age of 35-55 years. (6) The incidence of individuals who first show symptoms of LBP varies from 6.3-15.4%. (7)

Etiology

Having an extensive clinic and often none well-defined causes the etiology of Low Back Pain often remains unclear and difficult to determine. Attempts to answer questions on the etiology of the disease have been numerous, citing biomechanical, sociocultural, psychological, and epidemiological anatomical studies, but it is not yet possible to provide a proper scientific answer.

Low Back Pain is caused by a number of factors which may be of external, internal origin, depending on the individual characteristics of the patient, social life as well as factors in the form of autoimmune diseases or other forms that accompany the patient.

Factors of a physical nature are in the minority, traumas caused by falls, fractures often from osteoporosis in old age are factors that are immediately identifiable. Also the presence of vertebral infections or tumors are extremely rare as causes for Low Back Pain.

Weight lifting, occupation and working conditions, dynamic and static posture of the individual, weight lifting and repetitive physical work, lifestyle and psychological factors are all risk factors for Low Back Pain, but not only dynamic and physical conditions affect the appearance of Low Back Pain. (8)

Factors such as smoking, body weight, social conditions and the level of monthly income, insurance at work also affect the occurrence of Low Back Pain but also the length of time in which it persists (9).

Causes and factors also refer to the nature of Low Back Pain. Because Low Back Pain is classified as specific and non-specific, factors often determine the nature of the pain and its persistence. Specific factors are responsible for less than 20% of the development of Low Back Pain with a probability that the pain is from a specific cause with only 0.2% this and for the reason that the causes classified as red-flags are easily determined by the relevant specialists doing and their possible inhibition. (10)

Specific causes such as compression fractures account for 4% of cases with Low Back Pain, tumors or metastases 0.7%, ankylosing spondylitis 0.3% and 0.01% infections. (11)

PART 2, STUDY

Purpose

The purpose of this study is to study and determine the prevalence of non-specific LBP among physiotherapy students at the Faculty of Medical Technical Sciences, University of Medicine Tirana. Also study the characteristics of LBP and how it affects the daily and academic life of students.

Objectives of the study

-General objectives:

The objective of the study is to determine the prevalence level of LBP and evaluate its characteristics.

-Specific objectives:

1. Determine the degree of pain from LBP to students
2. To study the level of disability caused by LBP in students

Type of study

The study is of the Transversal type, prevalence

Methodology

The study included 80 students (73 females and 7 males) of the Master of Science in Physiotherapy, first year (n = 42) and second (n = 38) at the Faculty of Medical Technical Sciences of the Medical University of Tirana. Students completed a questionnaire and to participate in the study they had to meet certain criteria set by the study.

Criteria

Inclusive criteria	Exclusive criteria
•Age 20-23 years	• Trauma to the lumbar area
• Physiotherapy students	• Spinal deformities
• Both genders	• Recent inflammatory or infectious episodes
• BMI ≤ 35	• Tumors
	• Without LBP

Survey instrument

Data from students on their general reality and LBP characteristics were obtained through a questionnaire. The questionnaire consists of 20 modules. It was translated into Albanian and modified to suit the purpose of the study. The questionnaire is a modified combination between the VAS pain scale questionnaire and the Oswestry Disability Index questionnaire.

Data analysis

From the data collection 58 students met the conditions to participate in the study, of them (n = 27) were in the first year of master studies and (n = 31) in the second year.

22 out of 80 students were expelled because they did not meet the criteria set by the study.

The group of students (n = 58) who met the criteria for participation in the study had an average age of 21.7 years and an average body weight of 60 kg.

Each module of the questionnaire was analized to gather the data needed to come to a conclusion.

• Module 5

Module 5 seeks to identify how much time subjects spend during the day on exercise, sleep, study, sitting, walking, and work.

From the data obtained it is noticed that:

-Subjects spend an average of 0.8 hours on physical activity during the day

- Subjects spend an average of 7.8 hours of sleep during the day

- On average, subjects spend 3.4 hours per day studying

- Subjects spend an average of 6.5 hours sitting during the day

-The walk costs the subjects 1.4 hours during the day

• Module 6

This module seeks to identify the time when subjects experienced an episode of LBP for the first time during their academic career. Starting from the first year of the Bachelor to the second year of the Master of Science.

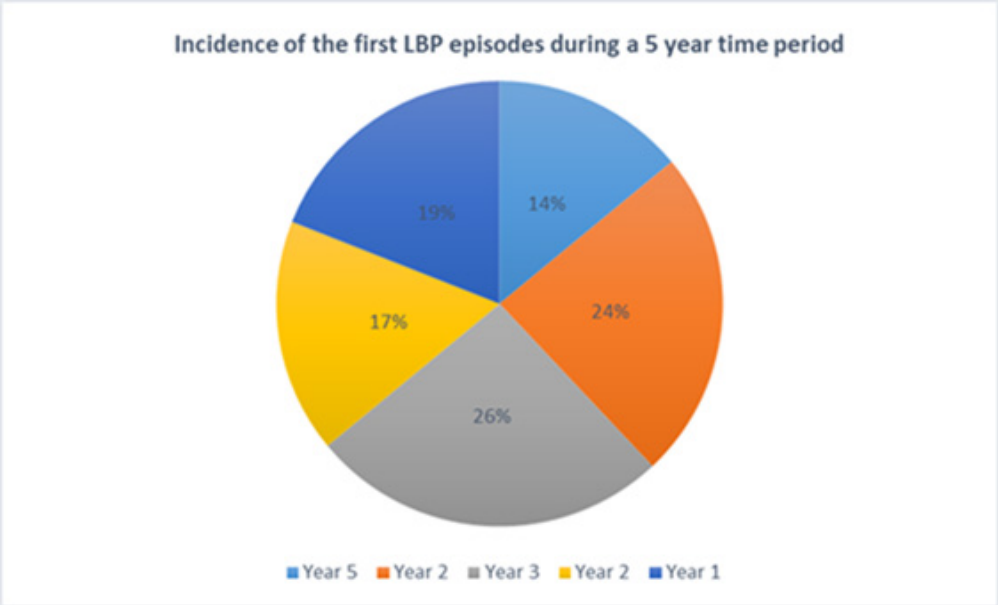
From the data it is noticed that:

- 14% of subjects (n = 8) have experienced LBP for the first time in the fifth year of their academic career.

- 24% of subjects (n = 14) have experienced LBP for the first time in the fourth

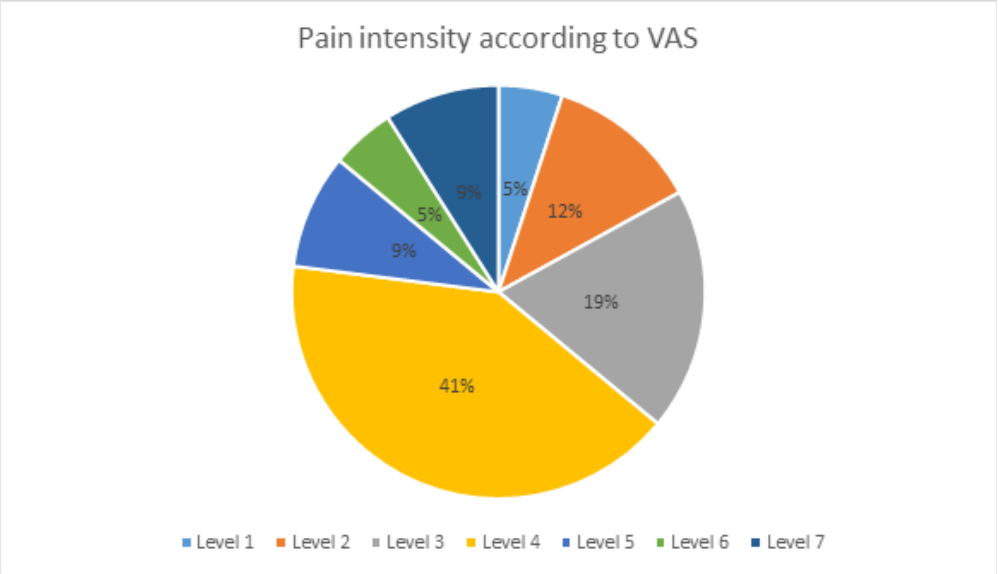
year of their academic career.

- 26% of subjects (n = 15) have experienced LBP for the first time during the third academic year.
- 17% of subjects (n = 10) have experienced LBP for the first time during the second academic year,
- 19% of subjects (n = 11) have experienced LBP for the first time during the first academic year.



• Module 7 contains the visual scale for pain level (VAS) and seeks to identify mean pain level.

The intensity of pain according to VAS will be calculated in the following way:
0 - no pain, 1-3 - mild pain, 4-6 - moderate pain, 7-10 - severe pain
The data shows that:
- 5% of subjects (n = 3) have a level 1 pain
- 12% of subjects (n = 7) have a level 2 pain
- 19% of subjects (n = 11) have a level 3 pain
-41% of subjects (n = 24) have a level 4 pain
- 9% of subjects (n = 5) have a level 5 pain
- 5% of subjects (n = 3) have a level 6 pain
- 9% of subjects (n = 5) have a level 7 pain
- Pain at level 0, 8, 9, 10 was reported by 0 subjects



• Modules 8 and 10

Module 8 seeks to identify the frequency of manifestations of LBP episodes. Where:

-"Never" and "Very rarely" refer to a frequency of 0 and low respectively,

-"Sometimes" refers to a moderate frequency

-"Often" and "Constant" refer to a high frequency

Module 10 seeks to determine if LBP has been manifested during the last 7 days at the time of completing the form

The data show that:

Module 8:

-6% of subjects (n = 4) reported that the pain was manifested "Very rarely"

-78% of subjects (n = 45) reported that the pain was manifested "Sometimes"

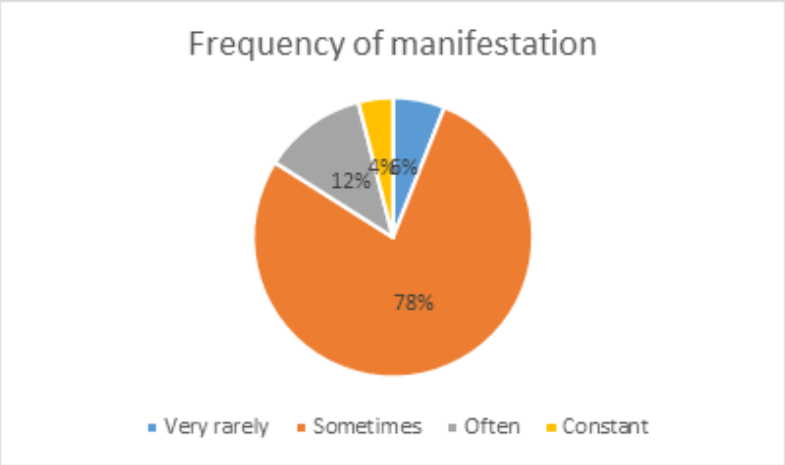
-12% of subjects (n = 7) reported that the pain was manifested "Often"

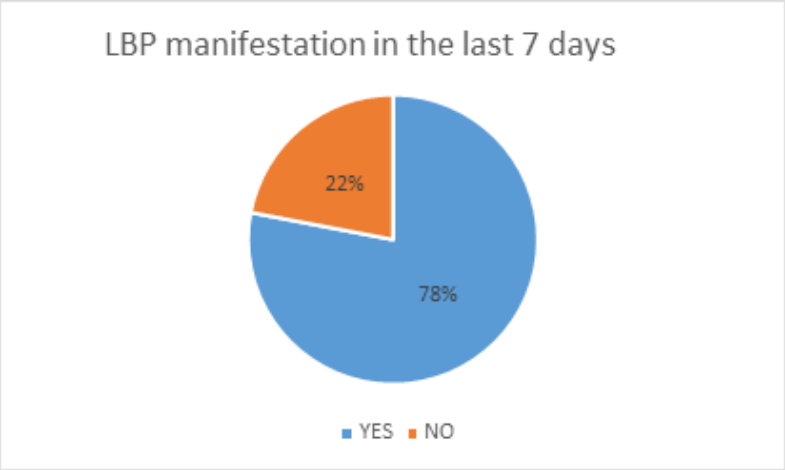
-4% of subjects (n = 2) reported that the pain was manifested "Constant"

Module 10:

- 22% of subjects (n = 13) reported that they had not experienced LBP during the last 7 days

-78% of subjects (n = 45) reported having experienced LBP during the last 7 days





• Modules 12 - 19 are part of the Oswestry Disability Identification Index for Disability

The 8 modules seek to identify how LBP affects stress, sitting posture, personal care and hygiene, standing posture, weight lifting, walking, work and study.

Each module contains a response rated from 0 to 5:

- 0 = LBP does not affect activity
- 5 = LBP has a major disabling impact on activity

0%-20%	Minimal disability
21%-40%	Moderate disability
41%-60%	Severe disability
61%- 80%	Disabled subject
81%-100%	Subject disabled in bed

The data show that:

- 60% of subjects (n = 35) report a minimal disparity with 0% -20% of points
- 40% of subjects (n = 23) report a moderate imbalance with 21% -40% of points

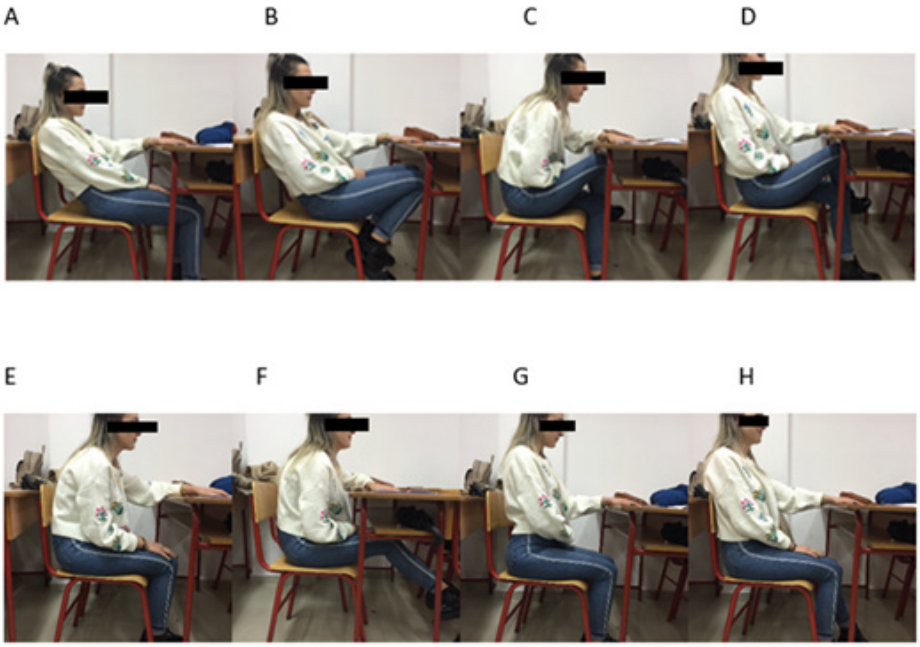
The average value of group instability is calculated = 19% (minimum disability).

- Module 20 in the questionnaire contains an illustration on the sitting position in the classroom. The illustration consists of 8 different positions:

1. Position A: Back with chair support and flatened lumbar lordosis with feet resting on the ground
2. Position B: Back rested in chair and flatened lumbar lordosis with flexed knees supported in chair
3. Position C: Back with kyphosis augmentation and crossed legs
4. Position D: Back supported in chair with crossed legs
5. Position E: Addition of the kyphosis with feet resting on the floor
6. Position F: Addition of the kyphosis with legs supported in another chair
7. Position G: Addition of lordosis with feet supported on the floor
8. Position H: Back rested in chair with legs supported on the floor.

From the data obtained it results that:

- 5% of subjects (n = 3) sit in position A, the average pain level according to VAS for this group is 2.6
- 9% of subjects (n = 5) sit in position B, the average pain level according to VAS for this group is 4.2
- 45% of subjects (n = 26) sit in position C, the average pain level according to VAS for this group is 3.3
- 16% of subjects (n = 10) sit in position D, the average pain level for this group according to VAS is 4.1
- 5% of subjects (n = 3) sit in position E, the average pain level for this group according to VAS is 3.3
- 10% of subjects (n = 6) sit in position F, the average pain level for this group according to VAS is 4.1
- 5% of subjects (n = 3) sit in position G, the average pain level for this group according to VAS is 4
- 5% of subjects (n = 3) sit in position H, the average pain level for this group according to VAS is 5.3



Results

At the end of the analysis of data obtained from students through questionnaires it results that the prevalence of non-specific LBP is 73%.

- The average level of pain according to the VAS scale is 3.77, 36% of subjects have a mild intensity of pain, 55% moderate intensity and 9% high intensity

- Disability according to the Oswestry index results in average values of 19% (minimum disability) where 60% of subjects (n = 35) report a minimal disability with 0% -20% of points. 40% of subjects (n = 23) report a moderate disability by 21% -40% of the points.

- It is noticed that 78% of the subjects have moderate episodes of recurrence of LBP where also 78% of them report that they had had episodes of LBP during the last 7 days. Subjects spend 66% of their day sedentary (lying down or sitting) and only 4% on physical activity.

Disscusion

The prevalence of LBP in physiotherapy students from my study turns out to be 73%.

From other studies with similar themes it is noticed that the prevalence of LBP is similar to that of my study.

Also the intensity of pain and the level of disability are seen to be in approximate values.

In the study conducted by Agnieszka Kędra et al., (12) with 1311 students of physical education and physiotherapy it resulted that the prevalence of LBP among these students was 70.1% where for pain data reported that 38.1% of students had a slight pain , 44.2% moderate and 17.7% severe.

-In my study these data are similar where 36% of subjects have a mild pain intensity, 55% moderate intensity and 9% high intensity.

Aminta S Casas et al., (13) in the study conducted with 516 students of the Industrial University of Colombia found that the prevalence of LBP among students was 79.8% and with an average pain value of 2.84, close to my study with a value of 3.77 .

Amelot, Aymeric MD et al., (14) in the study conducted at the University and Hospital Center La Pitiè -Salpètrière in France with 1243 students concluded that the prevalence of LBP among students was 72.1% with a minimum degree of disability of 18.89%,

-My study results in a degree of disability of 19% according to ODI.

Aleksandra Kolwicz-Gańko et al., (15) included 4 universities in the study with a total of 1321 students, the study did not determine the prevalence but determined that 43.4% of students had a pain of moderate intensity and 20% of high intensity, also between students saw a high degree of disability due to LBP where 60% of students have difficulty sitting and 50% have difficulty standing.

Isidora Vujcic et al., (16) in the study conducted at the Faculty of Medicine in Belgrade included 459 students and concluded that the prevalence of LBP was 75.8%. LBP affected the daily lives of students where 14.6% report that LBP affects sleep and 12% on walking.

Camille Tavares et al., (17) in the study conducted with 629 medical students in Brazil concluded that the prevalence of LBP is 81.7%, the mean value of pain intensity was 4 and 20.5% of students report that LBP interferes with social activities 33.1% LBP interferes with physical activity and 29.2% LBP interferes with school activity.

M Mierzejewski et al., (18) in the study conducted in Edmonton, Canada involving 462 physiotherapists found that the prevalence between them was 49.2% and 55.4% of physiotherapists reported minimal disability. The study also concluded that the population of physiotherapists had a higher prevalence than the general population of Canada by 27%

Leah Jane Nyland et al., (19) in her study included 250 physiotherapy students in Australia and found that the prevalence of LBP was 69%.

Nupur Aggarwal et al., (20) studied the prevalence of LBP among medical university colleges in Delhi, India including 160 students in his study and

concluded that the prevalence among them for LBP was 47.5%

Mustafa Ahmed et al., (21) included 232 students of private medical colleges in Malaysia. LBP prevalence was reported to be 65.1%

Asdrubal Falavigna et al., (22) compared the prevalence n of LBP among medical students with those of physiotherapy. 416 students were included in the study and the prevalence of LBP in physiotherapy students was 77.9% and according to the study physiotherapy students have a higher prevalence than those of medicine.

Grace O. Vincent-Onabajo et al., (23) in a study conducted at three Nigerian universities with 290 undergraduate physiotherapy students concluded that the prevalence of LBP was 45.5%

Beatriz Minghelli et al., (24) included in her study 752 adolescent subjects and students in Portugal. The study concluded that the prevalence of LBP among this group was 62.1%.

Peter A. Leggat et al., (25) in his study in Queensland, Australia included 145 occupational therapy students. The data show that the prevalence of LBP among this group of students was 64.6%. LBP is reported to affect the activities of daily living by 38.8% of students

Fahad Abdullah et al., (26) studied the prevalence of LBP among 1163 health science students. The findings of the study show that the prevalence of LBP is 56.6% and 90.3% of students reported minimal disability. According to my study minimal disability is reported by 60% of students.

Tim Mitchella et al., (27) included in his study to determine the prevalence of LBP 897 nursing students and nurses at work in Australia and found that the prevalence of LBP was 79%. 60% of students report reduced activity due to LBP.

P. A. Leggat et al., (28) in his study studied the prevalence of musculoskeletal problems and LBP among 261 medical students in Australia. The prevalence of LBP was reported to be 51.6%.

Sheikh Sabuj (29) studied the prevalence of LBP in the same population as my study with 80 LBP students and found that the prevalence of LBP was 93.75%.

Jerry Y Du et al., (30) studied the prevalence n of neck and back pain in 210 medical students. The prevalence rate of LBP was 47% and according to VAS the average pain level is 2.6

Salmina Magdalena Burger (31) in her study conducted in Australia with 208 physiotherapy students reported that the prevalence of LBP was 40%.

Conclusion

In conclusion, the study concludes that Low Back Pain has a high prevalence among physiotherapy students in Albania. This group of students is at risk for

occupational problems and disability due to Low Back Pain. The causes and risk factors of LBP in these students remain to be studied.

Recommendations

Based on the collected data and the conclusions that the study drew, we can recommend that:

- Students should strive to have a more physically active life and avoid extended sedentary hours.
- Be careful with every episode of Low Back Pain they experience and do not allow the pain to aggravate.
- Physiotherapy students apply LBP rehabilitation techniques on themselves.
- During prolonged sitting, apply relaxing exercises for the back at short intervals.

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Mental health and issues of psychiatric problems in patients with covid-19

Msc. *Mimoza LLAVDANITI*
Albania University, Lector

Dr. *Jetmira SHEHU*
Dr. Pneumologist, Regional Hospital of Gjirokastra

Abstract

Introduction

Covid 19, a multisystem disease first reported in the state of China in December 2019, would soon be knocking on the doors of Europe. The main focus was the damage that SARS-COVID 2 brought to all systems and organs, but few would stop at the impact of this new stressor on the world of human psychology. The disease itself with its unknowns, limited tests, still experimental treatment, isolation and hygienic rules, stigma, job loss as well as the financial burden of the disease, are negative factors that accompany the disease.

Purpose

To assess the impact of the COVID-19 Pandemic on mental health and the psychiatric sphere in affected patients as well as their families.

Methodology

This is a time study, which examined 30 patients who were diagnosed with COVID 19, in the local administrative unit of Gjirokastra in the period June-September 2020. The obtained data were subjected to statistical processing.

Results

It was found that 23% of patients had anxiety which they reported equally as stress. Insomnia was found in 65% of patients, stigma 30%, fear 58%, irritability 19%.

Conclusion

Mental health is vulnerable to the COVID-19 pandemic. It is imperative the presence of a mental health worker assist patients and their families.

Discussion

This study, in line with other scientific research, has concluded that emotional distress is always associated with adversity and this was also found in COVID-19. There are still differing opinions from the World Health Organization as to whether it should be classified as post-traumatic stress or rather in the spectrum of anxiety disorders and depression.

Keywords: mental health, COVID-19, anxiety, depression, PTSD.

The covid19 pandemic has had an impact on the lives of millions of people in the whole world.

Has been seen a deterioration of the mental health of persons who have not previously had problems in this area, as well as a relapse and deterioration of those with previous problems.

Mental health problems have been seen to begin early with the onset of the pandemic but are likely to persist after its onset, as the so-called second wave of the mental health pandemic. (1)

Figures taken from articles and studies conducted in different countries show this evidence: in the US 45% of adults reported stress and anxiety disorders, in Britain 33% of patients had high levels of anxiety. In Italy survivors had a spectrum of post-traumatic stress symptoms, stress (21%), anxiety (20%), depressive symptoms (17%), insomnia (7%). (2), (3).

The main factors that affect mental health problems are:

The direct impact of the disease that in a high percentage is also deadly. Being away from family members, both for the patient and for other family members, we take into account here the traditions and close family ties that are still strong for the Albanian culture. "Bombing" with sad news from the media, especially the exposure of health workers with many patients in serious

health condition, fear of infection, fear of infecting family members, the stigma of prejudice. Disproportionately mental health problems will appear in health workers who are at the forefront of the fight against the pandemic, disease survivors, family members, children who have lost loved ones, who have previously had mental health problems . (4)

Efforts to escape contamination, limiting activities and social interactions as well as the opportunity to contact social services. Lack of adequate provision of food, medicine. Inability to provide access to health care to treat both previous chronic illnesses: mental health as well as other chronic illnesses. The inability to attend places of worship, the ban on social and ceremonial gatherings makes these institutions lose their contribution to the psychological support of attendees. Extending the length of stay at home increases the likelihood that the most vulnerable groups will be victims of violence. In our tradition, family support is provided through the help of neighbors, with whom they have close relations. The lack of social services for the elderly means that in most of them the main source of assistance is the new relatives. In isolation, these broken relationships make these age groups more vulnerable to mental health problems. (5) (6)

Job loss and declining economic income. This has a strong impact especially in countries like ours with low per capita incomes. Economic difficulties are in all areas of the formal, informal and agrarian economy. The economic consequences have not yet been assessed exactly how long the pandemic has not yet ended, but this economic review comes at a time when the demand for expensive therapies is always increasing. (7)

Our study

Purpose

To assess the impact of the COVID 19 Pandemic on mental health and the psychiatric sphere, in patients affected by this disease and their families.

This is a challenging issue, as the main focus of the pandemic has been on the multiorgan damage of SARS COV 2, but few studies and therapeutic and supportive approaches to mental health.

Methodology

This is a time study, which examined 30 patients who were diagnosed with COVID 19, in the district of Gjirokastra in the period June-September 2020.

Patients were subjected to a closed-ended questionnaire, where they were asked to showed personal experiences, categorized according to the main manifestos of mental health indicators. The obtained data were subjected to statistical processing.

Results

It was found that 23% of patients had anxiety who reported the same as stress, this complaint was 10% higher in women. Insomnia was observed in 65% of patients. it was noted that this complaint was found not only in those who had previously suffered from insomnia, but also in those who had not previously had this complaint. Glucorticoid therapy was an aggravating factor, especially when applied at dinner. Insomnia was encountered in an approximate percentage in men and women. About 22% of patients who referred for drowsiness reported having used somnifere medications, which they had not used before.

Stigma 30% At the beginning of the pandemic this was even more evident. The idea that they would be prejudiced as careless was found in most of them 67%, while 45% reported that they had a lot of problems with the stigma of not being labeled as an individual who did not follow the rules of isolation. A smaller percentage had a sense of guilt of infecting colleagues or friends 31 %

Fear 58% and irritation 19%, patients reported that the main contribution to this sensation had the fact of being infected with a disease that has a high mortality rate, unlike seasonal flu. As evidenced is the fear that is accompanied by other indicators, such as anxiety, insomnia, stigma, etc.

Conclusion

Mental health is vulnerable to the COVID pandemic 19. It is necessary to have the assistance of a mental health worker to these patients and their families as well as other support structures. There is talk in international circles about the "wave" after the pandemic, which is dedicated to the consequences on mental health, based on the previous situation compared to natural and humanitarian disasters.

Discussion

This study, in line with other research, has concluded that emotional stress is always associated with adversity and this has also been found in COVID. The WHO still has dilemmas as to whether to classify it as post-traumatic stress or

more in the spectrum of anxiety disorders and depression. However, setting up support structures should be a priority, as mental health is just as important as any element of an individual's health.

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