Abstract Book

International Congress on Health Sciences and Medical Technologies 2019

ICHSMT'19

05-07 December 2019, Tlemcen, Algeria

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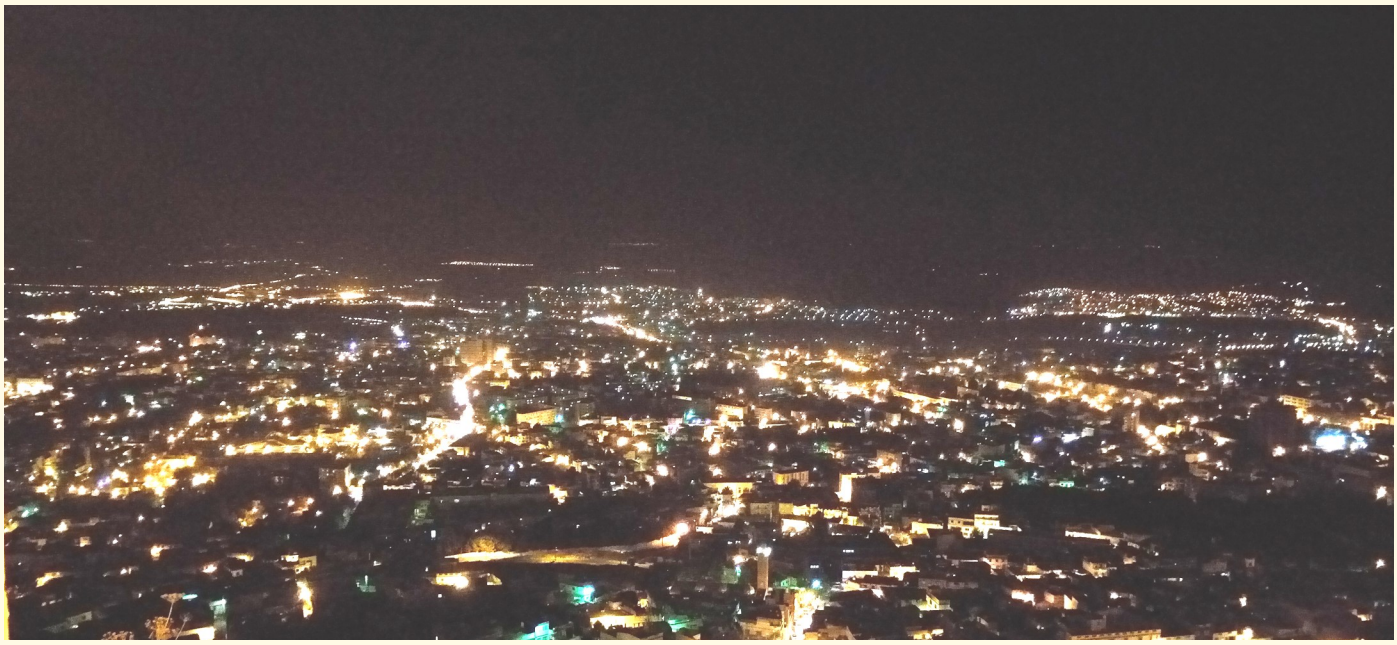

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International Congress on Health Sciences and Medical Technologies ICHSMT'19

5-7 December 2019, Tlemcen, Algeria

Editors

Dr Abdeldjalil Khelassi

Pr Wolfgang Seger

Dr Vania. V. Estrela

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Abstract's book of International Congress on Health Sciences and Medical Technologies ICHSMT'19

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Content

Preface

The International Congress on Health Sciences and Medical Technologies (ICHSMT'19) is an interdisciplinary platform for medical findings and innovations. It is an exceptional great endeavor to increase and strengthen the outstanding academic and professional progress fostered by all the joined efforts as well as relevant feedback on keeping the prior quality. It attracts a diversity of researchers, students, and organizations to contribute to the scientific progress. It is held at Tlemcen (Les Zianides Hotel) Algeria between 5 and 7 December 2019.

ICHSMT'19 is the fourth edition of a multidisciplinary congress regrouping five conferences and workshops namely:

- **ICMT'19: International Conference on Medical Technologies**
- **ICCPH'19: International Conference on Cancer and Public Health**
- **ICPCBS'19: International Conference on Preclinical and Basic Sciences**
- **International Workshop on Genetic items**
- **Session on Education Publication and Ethics**

We are proud to announce that this congress attracts contributors from 18 nations: Algeria, Germany, Iran, Switzerland, Netherland, Denmark, Malaysia, China, Portugal, Bulgaria, Pakistan, France, Morocco, Brazil, United Kingdom, Egypt, India, and Poland. The congress authors' affiliations were from several departments such as medicine, biology, physics, chemical sciences, computer science, environment, pharmacy, electrical and electronic engineering, and mechanical engineering.

We are also proud to report that the program committee has received 73 submissions, which was reviewed by multidisciplinary researchers. The Program committee (PC) accepted 86.3% of the submissions. The PC will promote the selected submissions for publication in reputed journals and books.

List of PC members:

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Dr. Sandro R. Fernandes	Instituto Federal de Educacao, Ciencia e Tecnologia do Sudeste de Minas Gerais (IF SEMG),Rio Pomba, MG,	Brazil
Dr. Jude Hemanth	Department of Electrical and Computer Engineering, Karunya University, Coimbatore,	India
Dr. Thierry Edoh	RFW-Universität Bonn	Germany
Dr. Anand Deshpande	KLS Gogte Institute of Technology, Belagavi	India
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We are so grateful for all students, researchers, organizers, and sponsors we name the list of sponsors:

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10. CERIST

Dr Abdeldjalil Khelassi

The chair of ICHSMT'19

December 2019

Invited talks

Data-Based Risk Assessment of Cancer Diseases for Life Insurance

Dr. Ralf Lohse

Abstract:

Using US cancer registry data of SEER (Surveillance, Epidemiology, and End Results Program), data-based analyses of prevalence, incidence, and survival rates are able for the medical risk assessment in life insurance. Statistical analyses of cancer patients and the base population were performed using SEER*Stat from the US National Cancer Institute. The system provides multivariate restrictions of patient groups and subdivisions of outcomes. The lecture focuses on survival time analyses and additional calculations for the outcome of extra mortality rates of cancer patients in relation to the base population. Based on these extra mortality rates, principles of underwriting decisions in life insurance will be presented.

Biography

Dr. Lohse obtained his B.Sc. in economic sciences at the Leibniz University in Hannover in 1992 and his D.Sc. in economics in 2004 at the Institute for Risk and Insurance in the same university. He worked at the German Market Department, Hannover Reinsurance SE, from 1993 to 1997, was part of the Actuarial Service Department, Hannover Reinsurance SE from 1997 to 2000, is in charge of the Life Risk Assessment since 2000 and performs as an underwriter for the Hannover Reinsurance SE.

The Assessment of Long-Term-Care, its Quality Assurance and Results
-The German Perspective-

Prof. Dr. Med. Wolfgang Seger

Abstract:

The consequences of demographic aging caused an impulse for German politics to establish an independent Social Long-Term-Care Insurance in 1995. Since then, the assessment for long-term-care became stepwise more comprehensive to cover the bio-psycho-social needs of an increasing part of the population. Nowadays, about 3.3 million persons receive benefits from this social insurance, which helps to cover a great part (but not in full) of financial and material support to overcome the impacts of long-term-care. About 2.5 million persons are assessed every year with continuously increasing tendency by nursing experts working for the Statutory Medical Service mostly performing home visits. They assess the appropriate scores for mobility, cognitive and communicative abilities, behavior, attitudes, habits and psychic problems, self-sufficiency, coping and handling of requirements due to disease and therapy, management of everyday life and maintaining social contacts, adding up to one of 5 grades, the need for technical aids, flat conversion, therapeutic procedures, rehabilitation, and educative support. The assessment guidelines, and the monitoring of the quality of their realization are presented as well as the outcome for the Long-Term-Care Insurance on the federal level. Twenty-five years of Long-Term-Care Insurance have led to a well established and steadfast insurance but with increasing expenses as well as rising social security contributions to face the challenges of a human and dignified evening of life for an increasing part of the population.

Biography

He graduated from the Freie Universität, Berlin. Next, he was a research assistant at the Institute of Clinical Radiology at Hanover Medical University. He opened his main practice in internal medicine/gastroenterology in Bad Pyrmont and operative therapy of two clinics in 1985. Senior physician at the Lorch Social Medicine Clinic from 1989 to 1991. Senior physician of the Social Medicine Department of the LVA Oldenburg-Bremen and for the health insurance of Lower Saxony (MDKN) in 1994. Deputy managing director in 1997. In 1998, the University of Bremen appointed him as an honorary professor for rehabilitation medicine. Former Medical Director of the Health and Long-Term-Care Advisory Board in Lower Saxony, Germany, Chairman of the Medical Advisory Board of the Federal Rehabilitation Council, Germany.

Access to Opioids in Palliative Care in Low- and Middle-Income Countries: The Case of Burkina-Faso
-How Can Blockchain and Internet of Things Assist? –

Dr Thierry Oscar Edoh

Abstract

Poor access to healthcare delivery services remains challenging in Low-and Middle-Income Countries (LMIC). In Burkina-Faso (BF), a Sub-Saharan African (SSA) country, patients requiring Palliative Care (PC) are especially facing poor access to pain drugs such as morphine. Facing poor access to pain-alleviating medicine can severely impact the daily quality of life (QoL). On one hand, patients are experiencing poor opioids access. On another hand, opioids abuse (with drug addiction), prescription falsification, fraud in the distribution, stock shortage are noticed.

This speech, therefore, would focus on investigating the reasons underlying the poor access to opioids in palliative care in BF and suggestions to improve the poor access to opioids. Furthermore, a blockchain (BC) and the Internet of Things (IoT) based system to secure and improve opioids supply, distribution, and prescription will be proposed. The main objective is to enable the traceability of any opioids prescription, and secure the supply and distribution.

Keywords: Poor Access to Healthcare, Drug Supply Chain, Drug Distribution, Palliative Care, Internet of Things for Healthcare, Blockchain for Healthcare, Quality of Life, Morphine Provision

Biography

Dr Thierry Oscar Edoh is an associate and affiliated researcher at the University of Bonn (Germany)/ Department of Pharmacy, visiting associate lecturer at the Institute of Mathematics and Physics (IMSP)/University Abomey-Calavi, (Benin-Africa), visiting lecturer at IUT Lokossa (Benin-Africa), and an affiliated researcher at the Technical University of Munich/Department of Applied Software Engineering (Germany). He is a guest lecturer at many African, Asian, and East European Universities. He received his diploma in computer sciences from the Technical University of Munich in Germany and a Ph.D. at the German Federal Army University, where he worked for several years on the improvement of rural health care provision and access to healthcare in developing countries using ITC systems. He performed postdoctoral research at the University of Bonn (Germany)/Department of Pharmacy. He worked on Drug Regulatory Affairs with a focus on Knowledge Discovery and Drug marketing authorization. He is a member of IEEE.

Artificial Intelligence-Based Diagnostic Tools for Screening of Retinal Abnormalities in Human Eye

Dr . D. Jude Hemanth

Abstract

A significant challenge in biomedical engineering is the noninvasive assessment of the physiological changes occurring inside the human body. Specifically, detecting the abnormalities in the human eye is extremely difficult due to the various complexities associated with the process. Conventional disease identification techniques from retinal images are mostly dependent on manual intervention. Since human observation is highly prone to error, the success rate of these techniques is quite low. Hence, the necessity of automated techniques for disease identification is significantly high. In this research work, proposing Artificial Intelligence (AI) based automated disease identification techniques in retinal images helps to solve this problem. The proposed approaches are tested on abnormal retinal images from four categories, such as Non-Proliferative Diabetic Retinopathy (NPDR), Central Retinal Vein Occlusion (CRVO), Choroidal Neo-Vascularisation Membrane (CNVM) and Central Serous Retinopathy (CSR).These techniques are analyzed in terms of classification accuracy, sensitivity, specificity, Positive Likelihood Ratio (PLR) and Negative Likelihood Ratio (NLR). Experimental results have been promising for these proposed techniques in terms of the performance measures.

Biography:

Dr . D. Jude Hemanth received his B.E degree in ECE from Bharathiar University in 2002, an M.E. degree in communication systems from Anna University in 2006, and a Ph.D. from Karunya University in 2013. His research areas include computational intelligence and image processing. He has authored more than 100 research papers in reputed SCIE, and Scopus indexed international journals and international conferences with leading publishers such as Elsevier, Springer, IEEE, etc. His Cumulative Impact Factor is more than 75. He has authored one book with (VDM-Verlag, Germany) and 21 edited books with reputed publishers such as Elsevier, Springer, IET and IOS Press.

ICMT'19: International Conference on Medical Technologies

Hematology and Digital Image Processing: Watershed Transform-Based Methodology for Blood Cell Counting Using the WT-MO Algorithm

Ana Carolina Borges Monteiro[1], Yuzo Iano[1], Reinaldo Padilha França[1], Vania V. Estrela[2], Rangel Arthur[3]

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Abstract:

Background: Most diseases can be detected by routine examination, even if they are in the initial phase. Currently, one of the most requested medical laboratory tests is that which allows detecting from bacterial infections until leukemias. However, for less favored populations, this examination can be seen as having a high cost.

Methods: Thus, this study introduces an algorithm of segmentation of images capable of detecting and counting red blood cells and leukocytes present in digital images of blood smear. The methodology was named by WT-MO, once it relies on the concepts of Watershed Transform and Morphological Operations. The experiments were conducted in the MATLAB software simulation environment, where 25 images were used in order to evaluate the accuracy, processing time, and execution time of the WT-MO algorithm.

Results: The results show that the WT-MO methodology presents high accuracy, reaching 96% and 92% in the red blood cell and leukocyte counts, respectively; reliability and low processing time, reaching an average processing time and execution time, achieving from 0.74 to 2.17 seconds. Therefore, the WT-MO algorithm can be seen as the first step in making laboratory tests more accessible to populations in underdeveloped and developing countries.

Conclusion: The WT-MO methodology helps not only disadvantaged populations gain access to low-cost, high-reliability tests but also has excellent potential for use in laboratories in developed countries.

Keywords: eHealth, Blood Cell Counts, Leukocytes, Erythrocytes, Image Processing.

Semantic Segmentation of Medical Images with Deep Learning: Overview

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Abstract:

Semantic segmentation is one of the biggest challenging tasks in computer vision especially in medical images analysis, in order to locate and identify pathological structures automatically due to the sensitivity in this kind of images, image segmentation is being an active research area employing different techniques but deep learning until now seems the best technique to improve its performance in medical image segmentation, in this paper, we describe semantic segmentation with deep learning and the most essential steps to build a model to deal with this problem.

Keywords: Deep Learning, Segmentation, Medical Images, Pathological Structures.

Biomedical Cyber-Physical Systems in the Light of Database as a Service (DBaaS) Paradigm

Maria A. de Jesus[1], Vania V. Estrela[1], Ana C. B. Monteiro[2], Reinaldo P. França[2], A. Khelassi[3], Yuzo Iano[2], Navid Razmjooy[4], Edwiges G. H. Grata[1]
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Abstract:

Background: A database (DB) to store indexed information about drug delivery, test, and their temporal behavior is paramount in new Biomedical Cyber-Physical Systems (BCPSs). The term Database as a Service (DBaaS) means that a corporation delivers the hardware, software, and other infrastructure required by companies to operate their databases according to their demands instead of keeping an internal data warehouse.

Methods: BCPSs attributes are presented and discussed. One needs to retrieve detailed knowledge reliably to make adequate healthcare treatment decisions. Furthermore, these DBs store, organize, manipulate, and retrieve the necessary data from an ocean of Big Data (BD) associated processes. There are Search Query Language (SQL), and NoSQL DBs.

Results: This work investigates how to retrieve biomedical-related knowledge reliably to make adequate healthcare treatment decisions. Furthermore, Biomedical DBaaSs store, organize, manipulate, and retrieve the necessary data from an ocean of Big Data (BD) associated processes.

Conclusion: A NoSQL DB allows more flexibility with changes while the BCPSs are running, which allows for queries and data handling according to the context and situation. A DBaaS must be adaptive and permit the DB management within an extensive variety of distinctive sources, modalities, dimensionalities, and data handling according to conventional ways.

Keywords: Database as a Service, Data Dimensionality, Healthcare Data, Cyber-Physical Systems, Big Data.

DICOM's Standardization in Histo-Pathology

Ana C. B. Monteiro[1], Reinaldo P. Franca[1], Vania V. Estrela[2], Y. Iano[1], Navid Razmjooy[3], Abdeldjalil Khelassi[4], Valeria Tananska[5], Wolfgang Seger[6], M. A. de Jesus[2], Edwiges G. H. Grata[2]

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Abstract:

Background: The Digital Imaging and Communications in Medicine (DICOM) standard helps to represent, store, and to exchange healthcare images associated with its data. DICOM develops over time and is continuously adapted to match the rigors of new clinical demands and technologies. An uphill battle in this regard is to conciliate new software programs with legacy systems.

Methods: This work discusses the essential aspects of the standard and assesses its capabilities and limitations in a multisite, multivendor healthcare system aiming at Whole Slicing Image (WSI) procedures. Selected relevant DICOM attributes help to develop and organize WSI applications that extract and handle image data, integrated patient records, and metadata. DICOM must also interface with proprietary file formats, clinical metadata and from different laboratory information systems. Standard DICOM validation tools to measure encoding, storing, querying and retrieval of medical data can verify the generated DICOM files over the web.

Results: This work investigates the current regulations and recommendations for the use of DICOM with WSI data. They rely mostly on the EU guidelines that help envision future needs and extensions based on new examination modalities like concurrent use of WSI with in-vitro imaging and 3D WSI.

Conclusion: A DICOM file format and communication protocol for pathology has been defined. However, adoption by vendors and in the field is pending. DICOM allows efficient access and prompt availability of WSI data as well as associated metadata. By leveraging a wealth of existing infrastructure solutions, the use of DICOM facilitates enterprise integration and data exchange for digital pathology. In the future, the DICOM standard will have to address several issues due to the way samples are gathered and encompassing new imaging technologies.

Keywords: DICOM, Whole Slide Imaging, Cytology, Histology Standards, Theragnostics, Tissue Studies.

Packet Synchronization in Network Time Protocol Server and ASTM Elycsys Packets during Detection for Cancer with Optical DNA Biochip

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Abstract:

Background: DNA BioChip technology, especially in the optical field, is a technique for studying a large amount of nucleic acid data at high throughput. It allows the simultaneous analysis of several tens of thousands of genes in a healthy or diseased biological sample, both in terms of its genome (DNA). In our article, we will present a more detailed overview of these optical DNA BioChips as well as the deployment of the NTP protocol for synchronization between the collection database and the optical biochip automaton using the ASTM Elycsys protocol for better and real-time detection/Diagnosis of genetically mutated cancer.

Methods: In our study, we use the UNIX Server platform and Network Time Protocol to synchronize communication between servers and Optical DNA BioChip automate.

Results: This work investigates real-time synchronization between the DNA BioChip and the remote sample database server with consideration of ASTM Elycsys packets traffic.

Conclusion: The use of NTP servers and the correct use of ASTM Elycsys Packets gives us results that will allow us to perform a real-time and reliable diagnosis. The objective of this research work that has been carried out by these researchers and that inspires and motivates us in our modest research, which for the moment is much more than theoretical. The ultimate goal of helping others is to be able to save lives, prolong lives, have a real impact on society, to make science serve society.

Keywords: ASTM Elycsys, Network Time Protocol, Optical DNA Biochip, UNIX.

Acknowledgment: The authors would like to thank Professor Abdelhakim Dinar from St. Peter's Neurology, Albany, New York 12204.

Pectoral Muscle Segmentation in Mediolateral Oblique Mammograms

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Abstract:

Background: According to the World Health Organization (WHO) statistics, Breast Cancer in Algeria reaches a rate of 40.7% with 11,847 cases, other statistics show that it affects in Algerian women older than 50 years old. The standard procedure to detect breast cancer at a very early stage is Mammography, while the presence of a Pectoral Muscle (PM) in the Mediolateral Oblique Mammograms (MLO) views, can lead to false positives and/or false negatives due to similarities of breast tissues' nature. Segmenting and removing the PM was the point of this study.

Methods: Employing 578 MLO Mammograms from three different databases as follows: *322*, *205* and *51* from the Mammographic Image Analysis Society (MIAS), INBreast, and Database of Digital Mammograms of Annaba (DDMA), respectively. The first phase comprised pre-processing techniques to enhance MLO mammograms. The second was the *(PM)* removal phase, represented by a combination of Thresholding, Arithmetic Multiplication operation, Morphological operators (erosion and opening*)* and logic Xor operator, which relies only on pixel intensity information.

Results: The quantitative results to evaluate the performance of our approach were estimated using the following indexes: *Dice Coefficient (D)*, *Jaccard Index (J)*, *False Positive Rate (FPR)* and *False Negative Rate (FNR)*. Where the average results achieved for the three databases are: [*D = 93%; J = 87%; FPR = 0.13 %; FNR= 0.021%*] for *MIAS*, [*D = 94%; J = 88%; FPR = 0.016%; FNR = 0.023 %*] for *INBreast* and [*D = 95%; J = 91 %; FPR = 0.031%; FNR = 0.010 %*] for *DDMA*. For a good experimental results *(D)* and *(J)* both should be closer to *100%,* on contrary, *(FPR)* and *(FNR)* both should be as close as possible to *0%.* The qualitative results illustrated a good to excellent outcomes and scores comparing it to the works already presented.

Conclusion: The results of the proposed approach showed encouraging scores over four evaluation metrics and comparing to the existing works in the literature.

Keywords: Breast Cancer, Mammography, Pectoral Muscle, Image Segmentation.

Feature Extraction for Detection and Classification of Stress Level

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Abstract:

Background: The detection and classification of stress levels can be conducted using different sensors or instruments like Galvanic Skin Response (GSR), Photoplethysmography (PPG), and Electrocardiogram (ECG). Commonly, the classification of stress using ECG signals uses P, QRS and T waves to form the input feature vector of classifiers. The extraction of appropriate features is crucial to enhance the performance of detection and classification. This study aimed to propose a method that classifies stress into three levels using ECG signals.

Methods: The Discrete Wavelet Transform (DWT) aid in extracting 133 statistical measures (features) from ECG signals. The Sequential Feature Selector method allowed the selection of 10 relevant features. Support Vector Machines (SVM) and Artificial Neural Network (ANN) were applied to classify stress into three levels (Low stress, Medium Stress and High Stress). The validation used the "Stress Recognition in Automobile Drivers" dataset.

Results: Our results showed high classification performance using either ANN or SVM classifiers (Accuracy=100%, Sensitivity=100%, Specificity=100%, Precision=100%, Recall=100%, f-measure=100%).

Conclusion: The ECG features extracted in the wavelet domain are capable of characterizing the variation of stress levels.

Keywords: Electrocardiography, Sequential Forward Selection, Support Vector Machines, Artificial Neural Network, Galvanic Skin Response, Stress.

Acknowledgment: This research was financially supported by the *Agence Thématique de Recherche en Sciences de la Santé (*ATRSS) under grant n°: 64/DFPR/ATRSS/2017.

Proposal for Medical Data Transmission in Healthcare Systems

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Abstract:

Background: Information systems used in hospitals are slow and consume a lot of system memory, facilitating crashes, impacting patients seeking consultation face long waiting periods by a medical specialist; Still considering that exchange patient data and medical consultations in system interconnected between hospitals, for scheduling of consultations may become even more latent.

Methods: Aiming to solve such problems, the present study implements modeling with discrete-event technology applied to a healthcare system, modulating the signal transmitted with the DQPSK format, through the simulation environment, the Simulink of the MATLAB software, improving the transmission of data, through a pre-coding process of bits adopting discrete events in the signal before modulation.

Results: This study aims to increase the information capacity for healthcare systems, bringing a new approach for signal transmission, undertaken in the discrete domain employing the discrete entities in the bit generation process, this use being the differential applied on the bit itself, in the physical layer, showing better computational performance regarding memory utilization related to compression of information, showing an improvement of 101.52%.

Conclusion: The proposal developed has the properties of improving the capacity of hospital services and can increase the performance of the communication between all medical devices, this positive impact is the result that the data stream will consume fewer communication resources.

Keywords: eHealth, Telehealth, Telecommunication, Telemedicine, mHealth.

Meibomian Gland Dysfunction in Soft Contact Lens Wearers, Is It Relevant?

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Abstract:

Contact lens-related dry eye is a significant problem and commonly encountered among eye care professionals. Dysfunction of meibomian glands leads to alterations in the lipid layer thickness and tear film stability. In this work, we compare three soft-contact lenses wearers for periods of 13, 19, and 20 years, respectively, to find out whether contact lens wears, has causality relation with meibomian gland dysfunction (MGD) or not. This study employs several investigation technics among with break up time (BUT) tear meniscus height and non-contact meibography technique, which is a specific imaging examination procedure developed to envisage in vivo the morphology of the meibomian glands straightforwardly. This work aims to highlight the fact that (i) MGD is a multifactorial disease, and (ii) contact lens wears are anything but one of the main factors.

Keywords: Meibomian Glands, Contact Lens, Extended Wear of Contact Lens, Meibography, Dry Eye.

Acknowledgment: The authors would like to thank Dr. M.B Mekki for capturing the meibography images included in this report.

A Practical Comparative Study of Machine Learning Algorithms for Breast Cancer Diagnosis

Djihane Houfani[1], Sihem Slatnia[1], Okba Kazar[1], Noureddine Zerhouni[2], Hamza Saouli[1], Ikram Remadna[1]
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Abstract:

Background: Breast cancer represents one of the major causes of women's death worldwide; it is the second common type of cancers that affect women after lung cancer. A breast cancer diagnosis is a time-consuming process and can have an element of human error in results. Machine learning techniques are an effective way for data classification in several fields, especially in healthcare. Those widely utilized methods improve medical diagnosis and decision making.

Methods: In this paper, a performance comparison between machine learning algorithms: Kernel Support Vector Machines (K-SVM), Linear Support Vector Machines (L-SVM), Logistic Regression (LR), Decision Trees (DTs), k-Nearest Neighbors (k-NN), Random Forest (RF), Multi-Layer Perceptron (MLP) on the Wisconsin Diagnosis Breast Cancer (WDBC) dataset is presented. The main objective is to evaluate these algorithms based on efficiency and effectiveness, in terms of accuracy, sensitivity, and specificity.

Results: Experimental results show that MLP and LR have proven their efficiency in Breast Cancer classification with an accuracy of 98%.

Keywords: Breast Cancer, Classification, Machine Learning, Accuracy, K-SVM, L-SVM, LR, DTs, k-NN, RF, MLP, Comparative Study.

Myopia: From a Good Knowledge To a Better Management

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Abstract:

Near-sightedness is a refractive error that currently represents a significant public health problem, as its prevalence continues increasing across the world. Individual studies suggest a wide variation in prevalence between different regions and ethnic groups. However, the common problem is the reduction of myopia onset age, which is an early onset increasing combined to high rates myopia progression, exposing the patient to untimely severe complications such as macular degeneration, retinal detachment, glaucoma, cataracts or even blindness. It is well established that genetics plays a vital role in the development of myopia and its progressive nature. However, it is not enough to explain the worldwide myopia rates increase. Many researchers studied the environmental factors on the visual development period of children and demonstrated the drastic influence of the onset and myopia progression. On the other hand, to manage the refractive correction devices and the treatment of complications weighs enormously on economics, it becomes essential to find effective solutions to slow down the myopia progression. This article reviews the various theories developed in order to date and classify the causes of the onset and progression of myopia, as well as the different strategies and treatments currently available to limit the myopia progression.

Keywords: Myopia Progression, Peripheral Defocus, Atropine, Orthokeratology, Optical Correction.

Detection of A, B, C, X and O Patterns in ICG Waveform for Stroke Volume and Cardiac Output Measurement

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Abstract:

Background: The Impedance Cardiography (ICG) is a novel non-invasive, safe, inexpensive method for measuring the blood volume variations inside the thorax by applying an alternating electrical current through band electrodes, provide variations in the ICG waveform that cause ambiguity in the detection of characteristic points which is used thereafter for hemodynamic parameters calculation.

Methods: In this work, we rely on multiple techniques that estimate the characteristics points on the ICG waveform such as the Scaled Fourier Linear Combiner (SFLC) algorithm, Wavelets Transforms, and the Hilbert Transform that are the gold standards for detection and other methods described below.

Results: The evaluation metrics corresponding to the detection techniques involve several parameters such as Mean Error, Root Mean Square Error, Means of Differences of intervals, Correlation Coefficient, Standard Deviation of Errors, Sensitivity, Positive predictivity, Detection Error, and others. According to our state of the art, the results showed that the points detection techniques were satisfactorily for beat-to-beat estimation under conditions for all methods already used which are compared with Doppler echocardiography results.

Conclusion: The automatic detection of the characteristics' points in the ICG waveform has been described. It can identify exactly their location on the processed or unprocessed ICG signal under conditions as healthy subjects in pre-exercise post-exercise and cardiac patients. The techniques developed by the authors have a high sensitivity and a low detection error. They are evaluated and compared with the signals obtained from the Doppler echocardiography thanks to indices calculation such as Stroke Volume and Cardiac Output.

Keywords: ICG, Characteristics Points, Automatic Detection, Hemodynamic Parameters, Evaluation Parameters.

Acoustic Contrast Between Neutral and Angry Speech: Variation of Prosodic Features in Algerian Dialect Speech and German Speech

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Abstract:

Background: The monitoring of emotions using speech is crucial in medical psychology and emotional health. The automatic detection of angry speech can aid to (i) estimate the level of stress and (ii) provide intelligence to nursing care robots. In-depth knowledge of the linguistic and acoustic properties of emotional speech is needed to achieve this goal. In this paper, we studied the acoustic contrast between neutral and angry speech by (i) investigating the variation of prosodic features (pitch, energy and duration) in Algerian Dialect (AD) and (ii) comparing it with German language (GL).

Methods: We proposed a methodology to quantify the degree of separation between anger and neutral states. We exploited subsets of emotional speech corpora of AD and GL. These two subsets include all AD and GL phonemes. For both subsets, we (i) estimated the mean values of the three prosodic features using the set of paired audio files composed of angry and neutral speech sentences, (ii) tested the separability of these paired observations using Wilcoxon matched-pairs signed rank and (iii) exploited the P-value to measure the acoustic contract.

Results: For both AD and GL: (i) prosodic features of neutral and angry states were statistically separable (the entire set of P-values were less than 0.05), (ii) F_0 and E were boosted in the angry state compared to neutral but decreased the duration. The contrast in energy between neutral and angry states was much higher for GL than AD (P-value_AD=1.18 10^{-14}, P-value_GL=1.92 10^{-12}). The same result held for pitch (P-value_AD=2 10^{-21}, P-value GL=2.46 10^{-14}). The opposite behavior was unrevealed for the duration (P-value_AD=0.01, P-value GL=3.4365 10^{-07}).

Conclusion: There is a significant difference between AD and GL in the variation of neutral and angry prosodic features.

Keywords: Speech Processing, Psychology, Emotional Health, Algerian Dialect, German Language.

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Artificial Intelligence and Its Application in Insulin Bolus Calculators

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Abstract:

In recent years, the development of new technologies such as Smartphones, Continuous Glucose Monitoring (CGM), and Insulin Pumps influenced the management of Type 1 Diabetes (T1D). This has been exploited by the Artificial Intelligence (AI) community to propose new methods of decision utilizing AI techniques for the management of some aspects of diabetes. Especially with the emergence of a new validated simulation environment for testing newly proposed control algorithms. Indeed, in the treatment of T1D, the patient must inject insulin before each meal. However, the determination of the appropriate dose is a complex decision-making problem that must be solved in order to avoid immediate and long-term complications related to an exaggerated fluctuation of the blood sugar levels. In this context, the Bolus Calculators (BCs) have been proposed, decision support systems, incorporated in some devices for insulin injection, and measurement of blood sugar levels. This article aims to present to AI researchers this problem only and methodologically providing the necessary background for the development and improvement of these tools. The authors believe that there are substantial ongoing opportunities for AI researchers to contribute to this area.

Keywords: Type 1 Diabetes, Bolus Calculator, In-Silico Evaluation, Mathematical Modeling.

Content-Based Image Retrieval (CBIR) in Big Histological Image Databases

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Abstract:

Background: Automatic analysis of Histopathological Images (HIs) demands image processing and Computational Intelligence (CI) techniques. Both Computer-Aided Diagnosis (CAD) and Content-Based Image-Retrieval (CBIR) systems assist diagnosis, disease discovery, and biological decision-making. Classical tests comprise screening examinations and biopsy. Histopathology slides offer more ample diagnosis data. However, manual examination of microscopic images is labor-intensive and time-consuming and may depend on a subjective assessment by the pathologist, which can be a challenge.

Methods: This work discusses a CBIR framework to extract and handle histological data, histological metadata, integrated patient records, specimen metadata, attributes, and similar stored files. This work presents a scalable image-retrieval framework for intelligent HI analysis with real-time retrieval. The potential applications of this framework include image-guided diagnosis, decision support, healthcare education, and efficient biological data management.

Results: The considerable amount of biological-related data prompted the development and deployment of large-scale databases and data-driven techniques to bridge the semantic gap between images and diagnostic information. The new cloud computing technologies and the concept of cyber-physical systems have improved the CBIR architectures considerably. The proposed scalable architecture relies on CI and validates performance on several HIs acquired from microscopic tissues. Extensive assessments show improvements in terms of disease classification and retrieval tests.

Conclusion: This research effort significant contributions are twofold. 1) Defining a comprehensive and large-scale CBIR framework to analyze HIs with high-dimensional features and CI methods successfully. 2) high-performance updating and optimization strategies improve the querying while better handling new training samples than traditional methods.

Keywords: Content-Based Image Retrieval (CBIR), High Dimensionality, Histopathological Image Analysis, Large Image Retrieval, Semantic Gap, Cloud Computing.

Self-Organizing Algorithm for Massive Tractography Datasets Clustering with Outliers Elimination Based on Multiple Species Flocking Model

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Abstract:

Background: The study of White Matter (WM) connectivity is of general interest in neuroscience, which is achieved by the analysis and clustering of the streamlines composed of the tractography dataset. The WM streamlines clustering is a challenge, because of the complexity and the vast size of the WM tractography dataset and its composition by various streamlines, in additionally to the presence of outliers.

Methods: Several WM clustering methods have been proposed in the literature to overcome these constraints. However, these methods stay statics. Once the clustering streamline is performed, it stays in this one. In this paper, we propose a new framework of distributed multiagent, improving, and adapting a bio-inspired model called Multiple Species Flocking (MSF) for WM streamlines clustering and automatic outlier elimination.

Results: The basic MSF rules are modified and adapted to perform streamlines clustering in higher dimensions. Specifically, each streamline is associated with a mobile agent and move onto a virtual space to form a group following the defined rules. Only the agents assigned to similar streamlines form a flock, whereas the agents assigned to dissimilar streamlines are sidelined and considered as outliers.

Conclusion: Swarm intelligence features of the approach, such as adaptivity, parallelism, dynamism, and decentralization, make our algorithm scalable to large datasets, very fast and accurate, which are confirmed by experimental results on synthetic and real datasets.

Keywords: White Matter, Clustering, Outliers Detection, Multiple Species Flocking Model, Swarm Intelligence, Multi-Agent Systems.

An Improved Brain Tumor Segmentation Method Based on Multi-Level Thresholding and Morphological Reconstruction

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Abstract:

Background: Segmentation of images aims to divide an image into several segments. These segments' selection happens according to the composition of the region of interest, the types of tissues, and the functional zones. Thresholding is one of the methods used to segment and analyze the image for their simplicity and adaptability.

Methods: The proposed method consists of 3 steps: (i) apply an intensity adjustment to enhance the image contrast, (ii) segment adjusted image by using a multi-Otsu method and (iii) perform a morphological reconstruction approach on the segmented image with the appropriate structuring element parameter in order to improve the quality of the image and isolate the tumor.

Results: This work presents the proposed method performance against some state-of-the-art algorithms (e.g., Otsu, K-means, and Fuzzy C-means).

Conclusion: The results demonstrate the effectiveness of the proposed approach as the accuracy rate with the proposed approach is better and higher than other methods.

Keywords: Segmentation, Multi-Otsu Method, Morphological Reconstruction, Tumor, Medical Image.

SDR-Based High-Definition Video Transmission for Biomedical Engineering

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Abstract:

Background: Software-Defined Radio (SDR) frameworks from cellular telephone base stations, e.g., Multiservice Distributed Access System (MDAS) and small cells, employ extensively integrated RF agile transceivers. The Internet of Medical Things (IoMT) is the collection of medical devices and applications that connect to healthcare IT systems through online computer networks. Medical devices equipped with Wi-Fi allow M2M communication, which is the backbone of IoMT and associated devices linked to cloud platforms containing stored data to be analyzed. Examples of IoMT include remote patient monitoring of people with chronic or long-term conditions, tracking patient medication orders and the location of patients admitted to hospitals, and patients' wearables to send info to caregivers. Infusion pumps connected to dashboards and hospital beds rigged with sensors measuring patients' vital signs are medical devices that can be converted to or deployed as IoMT technology.

Methods: This work proposes an SDR architecture to allow wireless High-Definition (HD) video broadcast for biomedical applications. This text examines a Wideband Wireless Video (WWV) signal chain implementation using the transceivers, the data transmitted volume, the matching occupied RF bandwidth, the communication distance, the transmitter's power, and the implementation of the PHY layer as Orthogonal Frequency Division Multiplexing (OFDM) with test results to evade RF interference.

Results: As the IoMT grows, the amount of possible IoMT uses increases. Many mobile devices employ Near Field Communication (NFC) Radio Frequency Identification (RFID) tags allowing them to share data with IT systems. RFID tags in medical equipment and supplies allow hospital staff can remain aware of the quantities they have in stock. The practice of using IoMT devices to observe patients in their homes remotely is also known as telemedicine. This kind of treatment spares patients from traveling to healthcare facilities whenever they have a medical question or change in their condition.

Conclusion: An SDR-based HD biomedical video transmission is proposed, with its benefits and disadvantages for biomedical WWV are discussed. The security of IoMT sensitive data is a developing concern for healthcare providers.

Keywords: Software-Defined Radio, Video Transmission, Biomedical Images, Telemedicine.

Framework for Remediating Math Illiteracy Relying on the IoT and Remote Assistant

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Abstract:

Background: Distance Education (DE) otherwise known as long-distance learning, alludes to getting ready students who are not physically in a classroom. DE can be Paced (PDE) and Self-Paced (SPDE). The PDE format looks like a traditional classroom. SPDE is presently the most common style of DE delivery. SPDE is generally asynchronous, whereas PDE can be either synchronous or asynchronous. The SPDE nature of the virtual classrooms, although it is a strange model for numerous learners and can lead to procrastination that produces course incompletion. The main goal of this investigation is to build a code that can train individuals with problems related to performing mathematical calculations with decimal places

Methods: The methodology used to specify, visualize, construct, and document the SISDI system model according to the object-oriented analysis and design model is the UML, while the programming language used in the implementation is Java. Another graph utilized in SISDI was the activity diagram that has the capacity to demonstrate the activities and changes starting from one activity to the next with the events. In the SISDI analysis and design, UML provides the notation of use case diagrams to illustrate the names of the use cases and actors, as well as the relationships between them. The use cases speak to the outside interface of the framework and determine many of the SISDI necessities, that is, just what it must do and not the best approach to achieve goals. The SISDI use case to be addressed is the CHOOSE EXAMPLE.

Results: Throughout this study, it was established that the math illiteracy among adults is very high in Brazil, and psychological aspects prevent users from learning more. The authors found out that nowadays, the concept of dyscalculia, which is the mathematical equivalent to dyslexia, is becoming quite popular particularly among the elderly.

Conclusion: The SISDI goals were to help illiterate elderly adults to overcome doubts and to learn how to perform calculations with decimal places. The whole procedure ought to be pursued and archived all the more intimate with quantitative methodologies, and consideration must be given to the improvement of new class designs that consolidate diverse subjects

Keywords: Math Illiteracy, Dyscalculia, Self-Paced Distance Education, Elderly.

CPH'19: International Conference on Cancer and Public Health

Iterative Hepatic Metastasectomy in a Woman with Breast Cancer - A Case Report

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Abstract:

Background: Breast cancer with liver metastases is considered an incurable disease. Despite a large number of liver metastasectomy performed for non-colic tumors, the benefit obtained, and indications are not very clear and non-consensual as the published series are of a small number with primitive tumors inhomogeneous.

Methods: We report the case of a 53-year-old woman treated for breast cancer with unique liver metastasis (31/26mm) of segment III associated with two bile cysts for which she first received taxane-based chemotherapy, given the marked reduction in size with a partial response of 75%, liver surgery was performed followed by adjuvant chemotherapy and hormone therapy.

Results: After a free interval of 21 months, a surveillance ultrasound found the reappearance of liver metastasis in segment IV of (18/14mm), a liver alcoholism was performed under ultrasound over 6 months and the evaluation found a stability of the lesion, re-operated a second time with resection of segment IV, 2 months after a liver CT finds suspicious nodules, metastatic segment V and VIII resumption of taxane-based palliative chemotherapy, after 9 cures on finds the disappearance of the v segment nodule and a partial response of 25% on the nodule of segment VIII, but the appearance of low-lying vertebral micro gaps marking a progression of the disease.

Conclusion: Liver metastasectomy should be considered in any patient with an excellent general condition and meeting the criteria for resecability, and this decision must be made within a multidisciplinarity framework in order to improve the survival of patients with breast cancer. Consensus to standardize the management of patients with liver metastases must be done, and for this prospective clinical trials are necessary in order to answer all the questions asked.

Keywords: Liver Metastasectomy, Breast Cancer, Taxotere, Fulvestrant, Iterative Hepatectomy.

Clinicopathological Characteristics of Breast Cancer in a Population of Eastern Algeria

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Abstract:

Background: One of the most common cancers in a female is breast cancer. It is the essential cause of neoplasia deaths among women in both developed countries and developing countries. The incidence of breast cancer has increased to more than 10000 new cases per year. Our study aims to determine the clinical characteristics of breast cancer in Eastern Algeria.

Methods: This is a retrospective study made in the public hospital EHS Abdallah Nouaouria El Bouni, Annaba gynecology, and anatomy pathology services, which included 40 patients over three months from July to September 2019.

Results: The mean age was 49.87 (SD = 9.2) years. The age group of 40–76 years represented the majority of the study population (85%). A total of 30 patients (75%) had invasive ductal carcinoma, while 3 (7.5%) had ductal carcinoma in situ, 3 (7.5%) had inflammatory breast cancer, 2 (5%) had mucinous carcinoma and 2 (5%) had phyllodes tumors. The average size tumor was 3,7 cm. The rate of tumor grade with large size T2, T3 and T4b was 70%. 45 % of the patients had positive lymph nodes, and 2.5 % had bilateral breast cancer. No metastatic cases reported. Results also show that the most affected women are between 35 and 55 years; 92.5% have invasive breast cancer, and more than 80% are in an advanced stage.

Conclusion: Histological diagnosis is crucial since it states the specific type of carcinoma. One of the best approaches to prevent this disease is an early diagnosis.

Keywords: Breast Cancer, Age, Clinicopathological Characteristics, Carcinoma.

Epidemiological Study of Breast Cancer in a Population of Eastern Algeria

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Abstract:

Background: Breast cancer is the most frequent malignant disease and the leading cause of cancer death among women; the incidence is about 1 of 8 women. Variables factors are considerate as a cause of breast cancer. In this study, we investigated some of the epidemiological features of non-metastatic breast cancer.

Materiel and Methods: This retrospective study included 34 patients over six months. We investigated different factors, including age, menopause and hormonal contraception. For statistical studies, we used the IBM SPSS software.

Results: The average age at diagnosis was 51.50 years (SD = 10.8). The patients' ages were between 28 and 76 years. The results showed that 44.1% of the studied population are in menopause. For both the breastfeed and the contraception intake, 61.8 % of cases present breast cancer.

Conclusion: The preliminary results of this study showed that age remains a significant risk factor, especially after menopause. The contraception can be an essential factor too. The reasons for the later fluctuation are not clear but may include long-term changes in hormonal factors, like if a woman started having her menstrual periods when she was young, breastfeeding, and oral contraceptive use.

Keywords: Breast Cancer, Menopause, Age Groups, Female Contraception.

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Ameloblastic Odotongenic Sarcoma of the Maxillary Sinus: A Rare Case Report and Literature Review

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Abstract:

Background: Ameloblastic odontogenic sarcoma is a sporadic malignant odontogenic tumor. Among the malignant odontogenic tumors (MOTs), ameloblastic fibrosarcoma (AFS) is the most common. The first described AFS appeared in 1887. Since then, there were about 100 cases of similar microarchitectural features described in the literature.

Methods: Ameloblastic odontogenic sarcoma occurs predominantly in the posterior mandible, most frequently in young adults. Histologically, the tumor showed biphasic components: Benign epithelium and a malignant mesenchymal component. It is locally aggressive with a high recurrence rate and few reports of distant metastases. The aim is to report the responsiveness of this disease and its evolution with a literature review.

Results: This report describes a recurrent aggressive lesion of 79-year-old man who had an Ameloblastic odontogenic sarcoma of the left maxillary sinus, treated by right maxillectomy with lymph node dissection and radiotherapy, re-operated 5 years after for a local recurrence; un excisional surgery has been indicated. 8 months after, he was admitted with local irresectable and distant recurrence of its disease with pulmonary metastasis. However, palliative systemic treatment was introduced with single-agent chemotherapy by doxorubicin according to its poor performance status after 3 months.

Conclusion: There was a clinical progression of the lesion, which proves the chemoresistance of the Ameloblastic odontogenic sarcoma reported in the literature. AFS is a locally aggressive malignant tumor, with regional and distant metastases being uncommon.

Keywords: Malignant Odontogenic Tumor, Ameloblastic Fibrosarcoma, Immunohistochemistry, Chemoresistance.

Effects of Capecitabine plus Oxaliplatin Regimen Called Xelox Supplemented with Bevacizumab on Oxidative Stress Markers in Algerian Patients Newly Diagnosed with Colorectal Cancer and Undergoing Chemotherapy

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Abstract:

Background: Many chemotherapeutic agents' treatments depend on free radicals profile to kill cancer cells. In this research, we focus on the assessment of the oxidative stress in colorectal cancer (CRC) and then evaluate the effect of the Xelox regimen plus bevacizumab on the redox status.

Methods: Forty one newly diagnosed CRC patients and fifty healthy subjects were included in this study. Blood samples were collected from control subjects and patients before and after anticancer cure. To investigate the association between redox balance and CRC treatment, levels of ROS and antioxidants were analyzed by spectrophotometry.

Results: Our findings revealed an increase in MDA, $O_2^{\bullet-}$, CP, $NO^{\bullet}$, $ONOO^-$ and SOD before treatment, and a decrease of CAT and GHS. After treatment, MDA, $O_2^{\bullet-}$ and CP levels decreased in CRC patients, the concentration of $NO^{\bullet}$ and $ONOO^-$ increased significantly in patients. The SOD, CAT activities, and reduced GHS levels were significantly higher after treatment at the opposite of plasma vitamin C concentration in CRC cases. These high levels limit the efficiency of drug treatment.

Conclusion: Oxidative stress is adaptively expressed with chemotherapeutic treatment to kill tumor cells, although the high antioxidant levels AT are not a good sign, inhibiting the eradicating effect of ROS for tumor cells, where patients are nonresponsive to therapeutic intervention. Further studies are required to examine the usefulness of the most promising oxidative biomarkers to predict response to treatment.

Keywords: Oxidative Stress, Colorectal Cancer, Xelox, Bevacizumab, Treatment Response

Acknowledgment: The authors are grateful to the Directors of the Popular Hospital Establishment and the private clinic for surgery "Avicène," Maghnia, Algeria, for the help in the patient recruitments for the study. They also thank all healthy volunteers for their participation to the study.

Clinical Interests of the Study of Adaptive Oxidative /Nitrosative Stress in Breast and Ovarian Cancer before and under Chemotherapy– A Case-Control Study

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Abstract:

Background: Breast and ovarian cancer are the most common female cancer in Algeria in terms of incidence and mortality. Cancer cells are exposed to higher reactive oxygen species (ROS) whose levels support death evasion, angiogenesis, and metastasis. Less interest has been given to changes ROS homeostasis in cancer therapy. In this study, we investigate redox homeostasis before and after treatment (BT, AT), to determine detrimental or beneficial outcomes in cancer therapy.

Methods: Cancer patients recruited at the Hospital of Maghnia with the engaging of healthy controls helped experiments to determine serum biochemical parameters and oxidant/antioxidant markers.

Results: Our findings showed oxidative stress (OS) reflected by an increase in malondialdehyde (MDA), carbonyl proteins (CP), superoxide anion ($O_2^{\bullet-}$), nitric oxide ($NO^{\bullet}$) and peroxynitrite ($ONOO^-$) levels and a decrease in vitamins C and glutathione (GSH), catalase, and superoxide dismutase (SOD) activities in cancer patients BT. After treatment (AT), levels of MDA, CP, $O_2^{\bullet-}$, $NO^{\bullet}$, $ONOO^-$ were maintained high and/or increase vis-à-vis patients BT. The lowered activities of SOD, catalase, and GHS level BT, heightened in AT cancer cases. Cholesterol, triglycerides, and uric acid levels increased in BC. Uric acid levels went down markedly in OC patients. HDL-cholesterol levels decreased significantly in both cancer patients.

Conclusion: Metabolic perturbations occurred with oxidative stress, which highlights an adaptive appearance vis-à-vis of treatments. As a double-edged sword, redox-signaling markers may represent a crucial point and could be the future targets for anticancer drug research.

Keywords: Breast Cancer, Ovarian Cancer, Oxidative Stress, Treatment Response, Anticancer Drugs.

Acknowledgments: The authors are grateful to the Directors of the Popular Hospital Establishment and the private clinic for surgery "Avicène," Maghnia, Algeria, for the help in the patient recruitments for the study. They also thank all healthy volunteers for their participation to the study.

Epidemiological Study of Bladder Cancer in the University Hospital of Tlemcen

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Abstract:

Background: Bladder cancer is diagnosed or treated worldwide in 2.7 million people each year (4%), and is the second urological cancer after prostate cancer (7th cancer localization in the world), 3% of cancer deaths, 75% of which are in men, most of those tumors appears after the age of 60. The objective of this study is to establish the epidemiological, clinical, histological, and therapeutic profiles of bladder cancer in this population.

Methods: This work deals with a retrospective study of all 104 patients treated at the Medical Oncology Department of the Tlemcen University Hospital for bladder cancer from January 2011 to December 2018. The sex ratio (M/W) is 12. The average age is about 67. The concept of smoking found in 81 patients, weaned in 42 of them. The average duration of change is 24 months [1-348]. Hematuria was the main reason for consultation (90/104). The disease has been diagnosed at a localized stage (19), locally advanced (7), localized or locally advanced (18), and metastatic (54). The metastatic lesions were pulmonary, in the liver, in the bone, and peritoneal. Patients benefited from transurethral bladder resection. The histological types were 96% urothelial carcinoma, 1% sarcoma, and 3% of other cancer types. 31 patients received surgery: curative type in 24 patients, and palliative in 7 patients. Twenty-one patients received radiation therapy: external type in 13 patients, in conjunction with chemotherapy (RCC) in 2 patients, analgal in 5 patients. Fifty-eight patients received treatment with chemotherapy, adjuvant in 10 patients, palliative in 24 patients, neoadjuvant in 22 patients, and combination with radiotherapy in 2 patients.

Results: In theory, bladder cancer is an elderly disease and about 80% of patients with bladder cancer were over the age of 60. The male predominance observed in our study reported by several authors around the world (about 90% of male patients). Smoking is the major risk factor for bladder cancer (80% of patients are smokers). The average age of discovery of the disease in our series is 67 years, compared to other countries (e.g., France, 70 years). More than 80% of patients see blood in their "hematuria" urine (the main reason for consultation with a rate of 86%. Urothelial-type tumors are the most common, and 96% of bladder tumor cases are urothelial.

Conclusion: At the end of these results, we find that bladder cancer is a typical localization especially in male smokers, usually occurs after the age of 60, and marked by the onset of hematuria, most often discovered at a late stage, hence the interest in raising awareness against tobacco poisoning with the development of screening methods, in order to ensure better therapeutic management of our sick.

Keywords: Bladder Cancer, Smoking, Hematuria, Urothelial Carcinoma, Chemotherapy

Tissue Expression of HSP27 in Prostate Cancer Is Correlated with the Aggressivity of Cancer in the Algerien Population

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Abstract:

Background: Prostate Cancer (CaP) is the second most common cancer in men and a major public health problem. Clinical outcomes at diagnosis are heterogeneous and difficult to predict, so predictive and diagnostic markers are needed. Heat shock proteins (HSPs) such as HSP27 are highly regulated in several malignant tumors. Basal HSP27 levels in most human tissues are low compared to high levels in tumors.

Methods: In this work, we evaluated, in subjects with CaP, the levels of expression of the HSP27 antigen in tumor tissues and its association with tumor aggressiveness. The Immunohistochemical (IHC) method was used to determine the expression of HSP27 in 58 prostate cancer tissues and 4 prostate hyperplasia (BPH).

Results: Tissue levels of HSP27 were significantly higher in patients with CaP than in BPH (QSM = 153.43±0; P<0.0001). In the case of aggressive cancer (Gleason score > 7), we found a very significant increase in HSP27 protein (QSM = 169.73±84.26; P<0.0001) compared to non-aggressive cancer (Gleason score ≤ 7) (QSM = 123.92± 91.36; P<0.001).

Conclusion: Overexpression of HSP27 in the tissues of patients with CaP compared to patients with BPH may be of diagnostic and/or prognostic interest and maybe a therapeutic target in patients with prostate cancer.

Keywords: Prostate Cancer, HSP27, IHC, Aggressive Cancer

Upper Bodylift after Massive Weight Loss by Bariatric Surgery

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Abstract:

Background: The upper body lift aims the correction of the upper back rolls and lateral breast rolls. In fact after massive weight loss, we perform the body lift (lower body lift) or belt lipectomy regularly. Nevertheless, it only treats the lower trunk from the ribs to the pelvis. It improves the mid-upper back, the thighs.

Methods: To contour the upper trunk and the breast, the authors propose 6 months after the lower body lift, an upper body lift in selected cases.

Results: During this surgery, we can also correct the hypertrophic and / or ptotic breast. The posterior incision is discontinuous at the midline due to the absence of cutaneous excess at this level. This incision improves a lot the healing process. The anterior incision recreates a better breast contour based on the correct position of the inframammary crease. The anterior correction of the breast uses a superior pedicle technique for reduction mastoplasty. In major cutaneous-adipous excess impairing of the arms at the side of the body, the authors propose an associated lateral thoracoplasty in another procedure in order to avoid skin necrosis and lymphorrhea. This surgery can be performed three months after the upper body lift and consists of a vertical incision from the axilla to the lateral aspect of the upper body lift scar.

Conclusion: The upper body lift can be associated to the brachioplasty procedure. Most of the time, the authors prefer to correct the brachial excess in a second procedure to ensure a better correction in the axillary aspect of the thorax. The brachioplasty could easily be associated with the lateral thoracoplasty. The authors present the critical points of this technique with the illustration of 6 cases.

Keywords: Upper Body Lift, Weight Loss, Bariatric Surgery, Brachioplasty, Body Contour.

Surgical Treatment of the Paralytic Eyelids

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Abstract:

Background: Consequences of facial palsy of the eyelids are palpebral in occlusion, upper eyelid shortening, ectropion of the lower eyelid. Conjunctivitis and keratitis are the major complications, always fearing an evolution to the corneal abscess.

Methods: Aims of the surgery are lengthening of the levator of the upper lid and correction of the ectropion. A shortening of the eyelid fissure could be mandatory.

Results: The surgical protocol uses a three-steps procedure under general anesthesia: (i) lengthening of the upper eyelid by the interposition of the temporal fascia into the levator, (ii) canthopexy, and (iii) with an asymmetric tarsorrhaphy.

Conclusion: The eyelid surgery can be performed as the first procedure in the facial palsy treatment, or the same surgery as the reanimation of the buccal commissure with a lengthening temporal muscle flap or in a second surgical time after the flap, depending on the need of the patient and the emergency of eyeball coverage.

Keywords: Facial Palsy, Ectropion, Eyelid Surgery, Corneal Abcess, Eyeball Coverage

Surgical Treatment of Macrocheilia in Vascular Anomalies of the Lips

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Abstract:

Background: Macrocheilia is a permanent augmentation of the volume of the lip. It can be related to a permanent swelling in case of inflammatory disease creating cheilitis with granulomatosis in Melkersson-Rosenthal, or Ascher's syndromes, or in Miescher's cheilitis. The macrocheilia with excessive lip size is mostly related to an apparent vascular malformation: lymphatic, venous, capillary, combined, or arteriovenous.

Methods: The precise diagnosis of the malformation after evaluation of the flow is mandatory before treatment. The analysis of the lip must be tridimensional: width, height, excess of projection, symmetry, about surrounding units (nose, chin).

Results: The surgical treatment is related to the nature of the malformation. In case of low flow malformation (venous, lymphatic, capillary or combined), a reduction (cheiloplasty) with cosmetic remodeling reduction is proposed. In venous malformation, this surgery may follow sclerotherapy procedures. In high flow arteriovenous malformation, the surgery is allowed just in case of radical excision after intravascular embolization. In vascular tumors, the majority of the cases are hemangiomas. This infantile tumor required often surgery before the modern use of beta-blockers.

Conclusion: Nowadays, the surgery is more or less remodeling of the sequelae. The authors precise the technical points of this sharp surgery with illustration of 12 cases.

Keywords: Macrocheilia, Lip Analysis, Lip Malformation, Surgical Treatment, Cheiloplasty, Hemangiomas.

Breast Implant-Associated Anaplastic Large Cell Lymphoma: French National Drug Agency Recommendations for Prevention

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Abstract:

Background: In February 2019, 59 cases of Breast Implant-Associated Anaplastic Large Cell Lymphoma (BIA-ALCL) have been diagnosed in France and an expert commission of the national drug agency gave the first national recommendations for prevention. The BIA-anaplastic large cell lymphoma was described in 2008.

Methods: There are two types of lymphoma: an in situ form limited to the periprosthetic capsule, and infiltrative form with a mass adjacent to the capsule. Two national expert teams must confirm the diagnostic before national expertise in a multidisciplinary concertation consultation.

Results: The surgeon aims early detection of in situ cases with a good prognosis. Clinical signs are periprosthetic seroma, volume augmentation of the breast, and pain. The presence of a mass or nodes is of lousy prognosis. Some risk factors are suspected are genetic factors, biofilms, textured implants. The macrotexture seems to be the dominant factor. The use of textured implants or with polyurethane coverage is forbidden and the use of smooth implants is mandatory.

Conclusion: The recommendations are clinical and radiological annual examinations and self-clinical examination. A national information paper was established for patients' use. In the absence of clinical or radiological abnormalities, no systematic explanation of the textured prosthesis is required. The national expertise process is still ongoing in France and regular conclusions are made public.

Keywords: Cell Lymphoma, Lymphoma Diagnostic, Breast Implant, Associated Anaplastic Large Cell Lymphoma, Macro Texture.

Colorectal Cancer in Elderly Patients: An Epidemiologic Study at University Hospital of Tlemcen

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Abstract:

Background: Colorectal cancer has a high incidence and occurs foremost in patients aged more than 65 years. This population is a very heterogeneous group, ranging from the very fit to the very frail. It has often been untreated due to comorbid diseases. However, thanks to the comprehensive geriatric assessment, which can detect unsuspected health problems, medical care of these patients has improved. The objective of this study is to establish the epidemiological, clinical, histological and therapeutic profiles of colorectal cancer in this population.

Methods: We carried out a prospective and descriptive study that includes 69 elderly patients with colorectal cancer treated from January 2016 to December 2018 in the medical oncology department at the University Hospital Center of Tlemcen.

Results: The average age at diagnostic is 71 years. The comorbid diseases consist of High Blood Pressure: (46%), diabetes (27%), other cardiovascular diseases (11.6%) and dyslipidemia (6%). Right-sided colon was more often achieved (57%) than the left one (11%) Adenocarcinoma is the most frequent histological type (59%). The tumor was classified as stage I (10%), stage II (23%), stage III (24.6%) and stage IV (26%). Lymph nodes metastasis was observed in 18.5% of cases. Metastases appeared mostly in the liver (77%). 58% of patients were assigned to conservative surgery wile 7% underwent a radical one. 26% of patients had adjuvant chemotherapy, 20% palliative one associated with target agents and 6 % had concomitant chemoradiotherapy. The mean geriatric score of G8 was 13, so the type of drugs and doses were adapted according to geriatric evaluation. The toxicity of treatment was dominated by diarrhea grade1 in 10% of cases, neuropathies grade 1 in 7%, vomiting grade 3 in 4%, and hand-food syndrome grade3 in 1.5%. The average survival is 13 months,

Conclusion: Aging is one of the factors we need to take into account to establish a treatment strategy for the elderly with colorectal cancer. However, patients aged more than 65 years must be treated in the same way as younger subjects together with a personalized strategy considering the comorbidities, performance status and lifestyle.

Keywords: Colorectal Cancer, Elderly, Comorbid Disease, Geriatric Assessment

Prospective Observational Study in Metastatic Colorectal Cancer at University Hospital Center of Tlemcen

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Abstract:

Background: The colorectal cancer is the most frequent of digestif cancers, the third most commonly diagnosed in males, the second in females and its diagnosis is often applied in advanced stages. In this study, we intend to look at the epidemiological, clinical, histological and therapeutic profiles of patients treated for metastatic colorectal cancer.

Methods: We carried out a prospective observational study from January 2016 to December 2017 at the medical oncology department at the University Hospital Center of Tlemcen. 29 patients with metastatic colorectal cancer out of 106, were involved.

Results: The average age is 57.48 years [31-79]. The concept of family neoplasia was found in 34.48 % of cases. The primitive tumor was colic (48.27 %), rectal (37.9 %), the recto-sigmoid hinge (6.89 %), and the anorectal junction (3.44 %). Right-sided colon was more often achieved (20.68 %) than the left one(17.24 %). Liver metastasis was the most common problem (58.62 %). Adenocarcinoma was the most frequent histological type. The RAS mutation appeared in 75 % of cases. 41 % of patients benefited from a combination of the target agents and chemotherapy. Treatment toxicity was dominated by neuropathy in 24 % of cases followed by diarrhea in 13.7 % of cases. The rate of patients receiving 3 lines of treatment was 17.24 %.

Conclusion: At the end of these results, it is essential to implement screening strategies to detect colorectal cancer at an early stage and consequently to reduce morbidity and mortality.

Keywords: Metastatic Colorectal Cancer, Liver Metastasis, Target Agent, RAS Mutation.

The Hygiene Hypothesis: The Interplay between IBD and Echinococcosis - An Experimental Model

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Abstract:

Background: According to the hygiene hypothesis, the dramatic decreasing of infections with bacteria and parasites, such as helminths, is the origin of the increasing incidence of IBD. Robust epidemiological data support this hypothesis, but the underlying mechanisms are unclear. We examined the influence of a helminthic infection, echinococcosis, on DSS induced colitis.

Methods: After three months of *Echinococcus granulosus* infection, the BALB/c mice were given DSS in their drinking water, in order to induce acute colitis. The Disease Activity Index was monitored daily, colon length was measured, and histological scores were evaluated. Nitric oxide (NO) and tumor necrosis factor α (TNF-α) levels were assessed. In addition, the colonic expression of inducible nitric oxide synthase (iNOS) and nuclear factor-κβ (NF-κβ) was examined.

Results: Our results demonstrated that *Echinococcus granulosus* infection significantly improved the clinical symptoms and histological scores observed during DSS-induced colitis, and also maintained mucus production by goblet cells. Interestingly, this infection caused a significant decrease in Nitric oxide (NO) and tumor necrosis factor α (TNF-α) production. These results were associated with localized down-regulation of inducible nitric oxide synthase (iNOS) and nuclear factor-kB (NF-kB) expression in colonic tissues.

Conclusion: Our data support the hygiene hypothesis and indicate that prior infection with *Echinococcus granulosus* can effectively protect mice from DSS-induced colitis and maintain the integrity of the intestinal mucosal barrier. Furthermore, these results suggest that Echinococcus granulosus infection decreases TNF-α production and iNOS induction through NF-kB inhibition, which in turn reduces the severity of DSS induced colitis.

Keywords: Hygiene, Echinococcosis, Infection, DSS-Induced Colitis, Tumor Necrosis, Inducible Nitric Oxide Synthase.

Copolymer Micelles as Drug Carriers for Cancer Therapy

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Abstract:

Background: Cancer raises serious concerns for health policymakers and scientists worldwide. According to published statistics, millions of deaths due to cancer are registered yearly in the world, and the trends indicate that these figures may rise to nearly 30 million by the year 2030 if a very efficient therapy is not found quickly.

Methods: Recent advances in nanomedicine and target drug delivery systems reporting successful advanced clinical tests are paving the way for a breakthrough.

Results: Polymer nanoparticle (NP) drug carriers represent a large part of this challenge where major achievements are expected in the development of biocompatible species with high drug loading capacity and precise targeting of the tumor.

Conclusion: The present contribution is an effort to shed light on how advances in polymer physics can contribute to understand the mechanisms of drug loading and delivery and improve the efficacy of tumor targeting and recognition by polymer-drug nanocarriers. We focus on micelles made of amphiphilic block copolymers, but similar reasoning can be applied to other systems such as dendrimers and hydrogels.

Keywords: Drug Delivery, Cancer, Micelles, Block Copolymers, Stimuli-Responsive Polymers.

Prospective Observational Study in Early Colorectal Cancer at University Hospital Center of Tlemcen

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Abstract:

Background: Colorectal cancer is the third most common tumor worldwide. In 95% of cases, it occurs for most men and women who are 50 or older that why the screening at this age is crucial. When found early, colorectal cancer is highly treatable and had consequently better outcomes. The objective of this study is to establish the clinic-pathological and histological features of patients treated for colorectal cancer stage 1.

Methods: This is a prospective observational study from January 2016 to December 2017 done at the medical oncology department at the University Hospital Center of Tlemcen. We involved 7 patients out of 106.

Results: The mean age at diagnostic is 61 years with women predominance. The cancer family history appeared in 43% of cases. The average time of the consultation is 6 months. The reason for the consultation was mostly rectal bleeding (57%) and diarrhea (28.5%). The recto-sigmoid hinge and the rectum were also affected by a rate of 43% vs. 14% for the colon. Surgical treatment was executed (100%). Adenocarcinoma is the frequent histological type. The histological classification was pT2N0M0 (86%) and pT3N0M0 (14 %). No adjuvant treatment was indicated for 5 patients. A concomitant chemo-radiotherapy was indicated for 2 patients.

Conclusion: A screening based on hemoccult tests every 2 years followed by colonoscopy in case of test positivity, allows to reduce the mortality linked to colorectal cancer in the target population and offers to patients treatments that are less heavy and a better quality of life.

Keywords: Colorectal Cancer, Concomitant Chemo-Radiotherapy, Screening, Hemoccult Test

Total Choanal Stenosis in Nasopharyngeal Carcinoma

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Abstract:

Background: Nasopharyngeal cancer is a high-incidence cancer in Southeast Asia. Maghreb countries are at an intermediate risk zone, including Algeria. Being very radiosensitive, the basic treatment for this cancer builds on the combination of radio-chemotherapy. Complications of radiation therapy have been widely described in the literature, particularly by teams in South China, where nasopharyngeal carcinomas have a very high prevalence. Nevertheless, the post-radial stenosis in the choanal region is exceptional.

Methods: We report a rare complication of radiation therapy that occurred one year after the end of the radiation therapy in a 30-year-old woman who is being offered surgery to improve the patient's quality of life.

Results: Radiation therapy can be subject to early and late complications. Post-radial choanal stenosis is exceptional: only a few published cases in the literature. The average age of patients reported in the literature is about 40 years. The most common revelers' symptoms are nasal obstruction, anterior rhinorrhea, and anosmia. Choanal stenosis is secondary to fibrosis caused by radiation therapy. Endoscopy performs the diagnosis. Imaging quantifies stenosis and shows its extent. A biopsy should be performed systematically to eliminate a tumor evolutionary pursuit. Treatment employs a resection of the stenosis region by endonasal video surgery.

Conclusion: Choanal stenosis is a rare and unusual complication of radiotherapy of nasopharyngeal carcinomas. Treatment is based on choanal disobstruction under endoscopic video surgery, but tumor recurrence must be eliminated beforehand by performing routine biopsies concerning stenosis

Keywords: Choanal Stenosis, Radiotherapy, Nasopharyngeal Cancer, Chemotherapy

ICPCBS'19: International Conference on Preclinical and Basic Sciences

CcMP-II Metalloproteinase from *Cerastes Cerastes* Snake Venom Acts both on Blood Vessel ECM and Platelets

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Abstract:

Background: Snake venoms contain various metalloproteinases that are highly toxic, inducing in severe bleeding by interfering with the blood coagulation and degrading the basement membrane or extracellular matrix (ECM) components. It has been suggested that hemorrhagic metalloproteinases interact in a specific way with platelet surface proteins resulting in an alteration of platelet function. Hemorrhage and tissue necrosis are common manifestations of viperid envenomations in humans, largely due to the actions of prominent metalloproteinases. CcMP-II a weakly hemorrhagic metalloproteinase purified from *Cerastes cerastes* venom, as already described it belongs to the class P-II snake venom metalloproteinase.

Methods: In this study, we characterized the biological effects of CcMP-II, including the ability of the enzyme to hydrolyze extracellular matrix components and plasma proteins, as well as its histopathological effects induced in capillaries. Then a study of the anti-aggregating activity was carried out and controlled for 10 min using a Chronolog aggregometer (ServiBIO) (USTHB, Faculty of Biological Sciences, BP 32, El-Alia Bab Ezzouar, 16111, Algiers, Algeria in 2019). The histopathological changes induced by CcMP-II were also analyzed and the 1 µm semi-thin sections are then stained with Toluidine Blue and the observation of these sections was realized using a photomicroscope. Toluidine Blue, magnification: 100x.

Results: Obtained results showed that CcMP-II metalloproteinase hydrolyzed selectively the A α-chain of fibrinogen. This enzyme hydrolyzed also laminin and type IV collagen in time- and dose-dependent manner. CcMP-II inhibits collagen-induced platelet aggregation of human PRP with an IC_{50} value of 0.11 nM. Pathological changes induced by CcMP-II after intramuscular injection in mice gastrocnemius were also studied. Histological study showed that the main morphological alterations in capillary vessels are characterized by a separation of endothelial cells from the surrounding basement membrane and reduction in the width of these cells, together with loss of basement membrane in some areas, through which erythrocytes and plasma are extravasated.

Conclusion: In conclusion, CcMP-II, as a member of the P-II class of SVMPs, presents a selective specificity toward fibrinogen, laminin and type IV collagen. It was an α-fibrinogenase metalloproteinase, which inhibits collagen-stimulated platelet aggregation. This study will contribute to understanding better the functional mechanisms of the metalloproteinases that may be useful in the development of therapeutic agents related to thrombotic disorders.

Keywords: Snake Venom, CcMP-II, Metalloproteinase, Platelets, Capillary.

Effect of Honey on Biofilm Formation of *Staphylococcus Aureus* Isolated from Peripheral Venous Catheter

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Abstract:

Background: Biofilm is a community of micro-organisms that adhere to biotic or abiotic surfaces.

Methods: The purpose of this study is to test the ability of *Staphylococcus aureus* isolated from peripheral venous catheters collected from resuscitation service at the (Tlemcen University Hospital) to form biofilm by different techniques. Of the isolates tested, one strain was strongly biofilm-forming using the Tissue Culture Plate (TCP) method with an OD of 4.3 and three moderately- forming.

Results: Four strains of *S. aureus* were slim-producing by the Congo Agar (RCA) method. The most formative strain was chosen to evaluate its ability to form the biofilm on a catheter in dynamic mode with a saline serum (NaCl) and another with glucose.

Conclusion: This pathogenic strain has a strong adhesion in the presence of NaCl with ($1.7\ 10^7$ CFU / cm^2) relative to the use of glucose serum (4.10^5 CFU / cm^2). The study of the effect of honey on the formation of biofilm on a catheter showed a decrease in adhesion of ($4.4\ 10^4$ CFU / cm^2) in the presence of NaCl and ($2.3\ 10^4$ CFU / cm^2) in the presence of glucose, whereas in the static mode the effect of honey against biofilm revealed a strong inhibition (100%) at concentrations of 50% w / v.

Keywords: Staphylococcus Aureus, Biofilm, Peripheral Venous Catheters, Honey.

Detection of Biofilm Formation of Klebsiella Pneumoniae Isolated from Medical Devices at the University Hospital of Tlemcen, Algeria

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Abstract:

Background: *Klebsiella pneumoniae* is a major cause of community-acquired and nosocomial infections. This germ is responsible for acute and chronic infections, most of which are due to its ability to adhere to medical implants and form a biofilm. The objective of this work is to study the interaction between clinical isolates of *K. pneumoniae* and abiotic surfaces (medical devices) and some factors influencing biofilm formation.

Methods: Over a period of 2 years, 115 strains of *K. pneumoniae* were isolated from medical devices CHU Tlemcen, most of which had a high level of resistance to cephalosporins 1st, 2nd, and 3rd generation. Their capacity to form biofilm was assessed using two 3 techniques: TCP, TP, and RCA. We determined *in vitro the* effects of three antimicrobial agents against planktonic and biofilm forms of *K. pneumoniae*. The presence of MrkD genes was detected by polymerase chain reaction (PCR).

Results: According to the studied (TCP, TP, RCA) strains of *K .pneumoniae* isolated from urinary catheters have proved very good, forming the biofilm to those isolated from other medical devices. 24 of 115 isolated strains showed a clear difference in antibiotic susceptibility between planktonic populations and biofilm populations. They were 10-20 times higher. All strains presented a highly hydrophilic character and adhesion 2-10 times greater in PVC with respect to glass support. The MrkD gene (detected by PCR) responsible for biofilm formation was found in 22 strains of *K. pneumoniae*, which may explain their adhesion and therefore their pathogenicity.

Conclusion: Our results show the great ability of *K.pneumoniae* strains to form a biofilm on medical devices, and the isolates were at least 10 times more resistant than their planktonic counterparts. In addition, we showed that the presence of type 3-encoding gene *mrkD* was associated with high adhesion indexes.

Keywords: Biofilm, *Klebsiella Pneumoniae*, Antibiotic Susceptibility, Urinary Catheter, Medical Devices.

Study of the Biological Activities of the Seeds of the Plant Ceratonia Siliqua L. Recovered in the Bejaia Region

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Abstract:

Background: *Ceratonia siliqua* is a plant that belongs to the Fabaceae family. It is frequently used in our culinary and medical traditions to fight cholesterol, acute diarrhea and digestive disorders.

Methods: The hydrogen atom or electron donation abilities of the corresponding extracts and some pure compounds were measured from the bleaching of the purple-colored methanol solution of 2, 20-diphenylpicrylhydrazyl (DPPH), studying the anti-inflammatory effect by measuring the volume of the edema of the paw that has received carrageenan 1%. Antimicrobial activity *in vitro* was screened by using disc diffusion and micro-dilution methods.

Results: The determination of the polyphenols of the methanolic extracts of the seeds reveals the richness of our extracts in polyphenols is 30 mg of gallic acid / g of extract. The aqueous and methanolic extract flavonoid assay shows that they contain high levels of flavonoids with contents of 07 and 10 mg equivalent of quercetin / g of extract respectively. The aqueous and methanolic extracts *of Ceratonia siliqua* seeds from the Bejaia region could bring the stable free radical 2.2 diphenyl-1-picrylhydrazyl (DPPH) to yellow-colored diphenylpicrylhydrazine with respective IC 50 values of 0.7 mg/ml and 0.2 mg/ml. They exhibit lower antioxidant activity than ascorbic acid (0.038 µg / ml). Determination of anti-inflammatory activity revealed that our aqueous and methanolic extracts of *Ceratonia siliqua L* seeds are able to reduce edema up to 81.89%. The methanoid extracts of *Ceratonia siliqua L*. seeds have a medium antibacterial action against bacteria*: E. coli* (13 mm), *Staphylococcus aureus* (12 mm) and *Pseudomonas aeruginosa* (12 mm). On the other hand, the aqueous extracts of the seeds of *Ceratonia siliqua L* have a weak antibacterial action against the same bacteria with a diameter of inhibition of 9 mm. However, the aqueous extracts of *Ceratonia siliqua L* seeds are endowed with a very important inhibitory action against *candida albicans* and it is similar to that of the antibiotic, antifungal Econazole (1%).

Conclusion: According to the results observed, the two extracts of the seeds and pods have a potential anti-free radical and antioxidant measured compared to the standard antioxidant used. The results of the antimicrobial activity carried out in vitro on the 3 bacterial strains indicate that the two methanolic extracts of this plant have low antibacterial activity.

Keywords: Fabaceae, *Ceratonia Siliqua,* Secondary Metabolites, Polyphenols, Antioxidant Activity, Antimicrobial Activity, Reducing Power.

Kidney Sensitivity to the Non-Toxic Fraction F1 in Physiological and Non-Physiological State

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Abstract:

Background: Scorpion venom contains several bioactive components that could be useful in therapeutic.

Methods: In this study, the effects of the repeated administration of the nontoxic fraction of *Androctonus australis hector* (*Aah*) venom after carcinogenesis induced by N-Nitrosodiethylamine (DEN) were investigated on rats. Metabolic parameters and oxidative stress markers were evaluated in sera and kidney.

Results: The obtained result revealed that DEN had disturbed the metabolic activities (an increase of transaminases and LDH activities) and had led to oxidative stress (a significant increase of NO and MDA levels and depletion of GSH rate) compared to the control. However, repeated injection of F1 shows a kind of modulatory effect on metabolism and oxidative stress. It shows a variable effect on metabolic markers (turn ASAT activity to normal level, recovered ALAT, and activities). A decrease of MDA level in sera and kidney and noticed an increase of GSH level in the kidney were observed.

Conclusion: F1 fraction purified from Aah venom contains many bioactive components. These biomolecules lead to enzymatic activity changes and to modulate oxidative stress in the kidney in normal and carcinogenic model. These changes seem to be beneficial in the pathological case.

Keywords: Aah Venom, Bioactive Components, F1 Fraction, Carcinogenesis, Oxidative Stress.

In Vitro Antioxidant, Photoprotective, Cholinesterase and Glucosidase Inhibitory Activities of Algerian *Crataegus Oxyacantha* Fruits and Leaves Extracts

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Abstract:

Background: *Crataegus oxyacantha* (Hawthorn) is regarded as a health food and medicinal plant in many countries, including Algeria.

Methods: The current research work was conducted in order to evaluate antioxidant (GOR, ABTS, FRAP, CUPRAC, and Phenanthroline), antidiabetic (α-glucosidase enzyme inhibition), neuroprotective (cholinesterases enzymes inhibition) and photoprotective activities of *n*-butanol and ethyl acetate extracts from leaves and fruits of *Crataegus oxyacantha* using standard methods.

Results: The results revealed that the ethyl acetate extract of leaves which contains the highest values in terms of total bioactive contents, exhibited the highest antioxidant potential. Moreover, all plant extracts had an inhibitory effect on α-glucosidase. The inhibitory effect was concentration-dependent and the most potent inhibitor for α-glucosidase was the *n*-butanol extract of leaves (IC_{50}=4.99±0.82). The results also indicated a substantial butrylcholinesterase (BChe) inhibitory activity for *n*-butanol (IC_{50}=175.35± 16.25) and ethyl acetate (IC_{50}=148.23±13.41) extracts of leaves, the *n*-butanol extract was the most potent inhibitor of acetylcholiesterase (AChE) (IC_{50}= 159.09± 7.68). Moreover, all extracts exhibited significant photoprotective potential with SPF values range from 17.19±0.10 to 48.66±0.00.

Conclusion: Therefore, *C. oxyacantha* could be used as a natural sunscreen in pharmaceutics or cosmetic formulations and as a good source of antioxidant, antidiabetic, and anticholinesterase agents.

Keywords: *Crataegus Oxyacantha*, Antioxidant, Photoprotective, Anticholinesterase, Antidiabetic, Bioactive contents.

The Study of the Modification of the Antimicrobial Activity of Algerian Propolis by Cyclodextrins

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Abstract:

Background: Propolis samples collected from two Algerian regions, the former the Central region, i.e., Chlef and the latter, the North West region, i.e., Tlemcen was extracted using ethanol providing a series of ethanol extracts (EEP). The latter complexed in solution by cyclodextrin using a UV spectrometer.

Methods: Antimicrobial activity of samples was investigated by the disc diffusion method (Bauer et al., 1966) using Mueller Hinton agar. The Institut Pasteur d'Alger/Algeria provided reference strains with four strains, two Gram-positive [B. *cereus* (IPA) and *Staphylococcus aureus* (ATCC 25923R)] and Gram-negative [*Escherichia coli* (ATCC25922) *Acinetobacter baumanii* (ATCC 19606) and *Citrobacter freundii* (ATCC 8090)]).

Results: According to the results, all EEP samples showed antibacterial activity against all strains and the antimicrobial activity varied according to the origin of the propolis. Moreover, the observed antimicrobial activity was higher against Gram-positive bacteria as compared to their Gram-negative counterparts. We note that the inhibition diameter is the most intense, even in the presence of CD against S.aureus. The latter is known for its resistance and its involvement in nosocomial infections.

Conclusion: We can conclude that the contribution of cyclodextrin plays a role in the mode of action of the propolis-CD complex towards the S.aureus bacterium. The mode of action must be studied in depth to elucidate why this improvement of the antibacterial acacia and only towards S.aureus.

Keywords: Antimicrobial Activity, Algerian Propolis, Cyclodextrins, S. Aureus.

Acknowledgments: We thank CRAPC Center for NMR and LC-MS analyses, the ATRST (L'Agence Thématique de Recherche en Sciences et Technologie), and the Ministry of Higher Education and Scientific Research (Algeria).

A Comparative Study by NMR and LC-MS of Chemical Composition and Antioxidant Activity of Algerian Propolis from Different Regions

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Abstract:

Background: Propolis a natural source of bioactive molecules very diversified. Unfortunately, very little work is done in the literature on Algerian propolis. Our objective is to study in-depth the chemical composition and the biological activity of the Algerian propolis of several regions.

Methods: The propolis samples were analyzed using the same acquisition parameters. All ^{1}H-NMR experiments were performed at 300°K, and the spectra were acquired at 400.13MHz. HPLC-MS/MS for EEP from Tlemcen (40mg.mL^{-1}) were filtered through a 0.22 mm filter, and then they were diluted with methanol (1:100).

Results: After performing the NMR analysis for all EEP, the presence of the phenolic compounds in the propolis extracts was checked by HPLC-MS/MS. EEP (CP) from Tlemcen showed the highest amount of polyphenols (89.53mg.g^{-1}) and flavonoids (134.8 mg.g^{-1}) along with the highest antioxidant properties (CP). It is obvious that the observed biological activities depend on the chemical composition as a whole, but not exclusively on polyphenols and flavonoids contents.

Conclusion: This work is a contribution to enlarge the knowledge about Algerian propolis and its antibacterial, antimicrobial and antifungal activities, taking into account the geography, botany and climate where samples were collected.

Keywords: Algerian Propolis, NMR, LC-MS, Flavonoids, Polyphenols, Antioxidant Properties.

Removal of Drugs from Hospitals Wastewater by Photodegradation

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Abstract:

Background: Hospital wastewater (WWs) represents a particular type of effluent, compared with urban wastewater. Hospitals generate on average 750 L of wastewater by the bed and by day so they are 2-5 times higher than urban flow rates, which refer to one inhabitant equivalent (typically included in the interval 120-250 L). This significant quantity of water per day for different purposes and services depending on the activities which take place within the structure.

Methods: In our work, we proposed tow methods; the first one is the complexation with CD for the treatment of drugs from Hospital WWs, which makes solid precipitate that can be filtered later. Our second method is the photodegradation of most drugs found in Hospital WWs with a know UV lamp and time for each type of drug elimination.

Results: Our result for the first method is the formation of a CD-drug complex as a solid precipitate which will be filtered later and eliminate the solution to be purified. For the second method, the use of the UV lamp at 300 nm gave a degradation of 70% of the drug of the solution after 30 minutes of irradiation. The follow-up of the photodegradation was carried out by UV spectroscopy.

Conclusion: The elimination of drugs from hospital waters is essential, the method we have developed on a small scale can be standardized in Algerian hospitals that do not contain hospital water treatment policies, before reaching urban waters. This congress will be the occasion to discuss this national problem and a call of installation of ministry at the level of each hospital.

Keywords: Hospital Water, Wastewater, Photodegradation, UV Spectroscopy, Water Treatment.

Removal of Copper from Industrial Wastewater and Its Relationship with Wilson's Disease in the Maghnia Region (Algeria)

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Abstract:

Background: Heavy metals are the most harmful of the chemical pollutants and are of particular concern due to their toxicities to humans. From this toxic metal Copper, which has effects in drinking water on the gastrointestinal tract, but there is some regarding the long term effects of copper on sensitive populations such as carriers of the gene for Wilson disease and other metabolic disorders of copper homeostasis.

Methods: We choose as a natural adsorbent in this work the seeds of *Moringa oleifera* (SMO) from the Mali variety, which can be an economical and environmentally safe method of water purification. All experiments were conducted at room temperature and after being allowed to stand for two hours, the samples were analyzed using the Atomic Absorption Spectrophotometer (AAS). The seeds of *Moringa* were prepared by taking approximately 1 g of the seed crushed and mixing it with about 20 cm^3 of water to be purified in three different beakers.

Results: The various solutions after filtration, showed an increased density in the quantity of copper, which proves the effectiveness of the purifying power of the seeds of MO. The best results of adsorption were for 30 min of contact time. We had 50% copper removal. The effect of contact time is important in biosorption experiments to determine the equilibrium time required for the uptake of metal ions by MOS.

Conclusion: In this study, the SMO from Mali were shown to be an efficient natural adsorbent material of copper from aqueous solutions. The capacity of SMO to remove copper depends on many criteria as; plant variety and conditions of experiments. Our Investigation is going on the study of removal parameters such as contact time, pH, temperature, particle size, sorbent dose, and initial metal concentration.

Keywords: Moringa Oleifera, Natural Adsorbent, Copper, Industrial Wastewater, Wilson's Disease, Maghnia.

Exposure to Triiodothyronine Causes Damage of the Spermatogenic Process in Immature Testis of Rats

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Abstract:

Background: Thyroid hormones are the crucial players in the regulation of male gonadal developments and reproductive functions. Altered thyroid status affects testicular functions.

Methods: This study aims to elucidate the effects of T3 administration on the testis during development throughout sexual maturation in rats. Male pups were divided into two groups. T3 group was administered 80 µg/kg body weight intraperitoneal T3 injections daily for 21 days from the 1st postnatal day, while the control group was administered saline intraperitoneal injections. The pups were sacrificed at pnd 20 and 30.

Results: T3 treatment resulted in a significant decrease in body weight, testicular hypertrophy during the treatment period. The level of testosterone decreased but the FSH level increased significantly on days 20 in the T3-treated groups. The incidence of tubules containing degenerating germ cells was increased 3.08 and 1.23 times at pnd 20 and 30 respectively in comparison to the control.

Conclusion: The testicular ultrastructure showed that T3 caused epithelium disorganization within many seminiferous tubules, damage to the mitochondrial cristae and vacuole formation in Sertoli cell cytoplasm. These findings demonstrate that T3 exposure influences the maturation of the spermatogenic process by causing damage to the mitochondrial structure, which contributes to testicular impairment.

Keywords: Hyperthyroidism, Mitochondria, Spermatogenesis, T3, Testis, Spermatogenic Process.

Molecular Drivers of Emerging Multidrug Resistance in *Proteus Mirabilis* Clinical Isolates from Algeria

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Abstract:

Background: This study aimed to characterize the molecular drivers of multidrug resistance in *Proteus mirabilis* isolated from Algerian community and hospital patients.

Methods: A total of 166 *P. mirabilis* isolates were collected from two hospitals and eight private laboratories from four cities (Khemis Miliana, Aïn Defla, Oran, and Chlef) located in northwestern Algeria. All isolates were identified by matrix-assisted laser desorption/ionization time-of-flight mass spectrometry (MALDI-TOF/MS). Antimicrobial susceptibility testing was performed by disk diffusion and Etest methods. Genes encoding AmpC β-lactamases, extended-spectrum β-lactamases (ESBLs), quinolone resistance and aminoglycoside-modifying enzymes (AMEs) as well as plasmid replicon typing were characterized by PCR. Clonal relationships were also determined by enterobacterial repetitive intergenic consensus PCR (ERIC-PCR) typing and were compared with MALDI-TOF/MS proteomic typing.

Results: Of the 166 *P. mirabilis* isolates, 14 (8.4%) exhibited resistance to important antibiotics, including amoxicillin, amoxicillin/clavulanic acid, cefotaxime, gentamicin, and ciprofloxacin, of which 4/14 (28.6%) had an ESBL genotype (blaCTX-M-2) and 10 (71.4%) had an AmpC/ESBL genotype (blaCMY-2/blaTEM-1). AME genes were detected in all isolates, including ant(2″)-I, aac(3)-I, aac(6′)-Ib-cr and aac(3)-IV. The qnrA gene was identified in 13 isolates (7.8%). ERIC-PCR showed one predominant clone, with eight blaCMY-2-producing isolates from UHC Oran belonging to profile A clustering together in the MALDI-TOF/MS dendrogram.

Conclusion: Here, we report the first description of AME and plasmid-mediated quinolone resistance genes among ESBL- and/or AmpC β-lactamase-producing *P. mirabilis* isolates from the community- and hospital-acquired infections in Northwestern Algeria.

Keywords: *Proteus Mirabilis*, AmpC, Extended-Spectrum B-Lactamase, ESBL, Aminoglycoside-Modifying Enzyme, Algeria.

In Vitro Effect of Crude Extract from *Traganum Nudatum* on Glucose-Uptake in Liver Slices Isolated from Wisatr Rats

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Abstract:

Background: Diabetes mellitus is a metabolic disorder characterized by chronic hyperglycemia resulting from defects in insulin secretion, insulin action, or both. There are many classes of drugs used for treatment, and these include insulin sensitizers, insulin secretagogues, and agents that delay the absorption of carbohydrates from the bowel. This study intends to investigate the effect of crude extract from a plant from South Algeria Traganum nudatum (Chenopodiaceae) on glucose uptake in liver slices isolated from Wistar rats.

Methods: The liver slices were incubated for 90 min at 37° in normoglycaemic (1g/l of glucose) and hyperglycaemic (3g/l of glucose) KRBA Krebs Ringer Bicarbonate Albumin 4% media using 24 well-polyethylene plates. In each, well different concentrations of insulin (10, 50 and 100µU/ml) and hydromethanolic crude extract (100, 200 and 500µg/ml) were added. After every 30 minutes, aliquots of the culture media were assayed for the determination of glucose left.

Results: Tests showed that the glucose left after 90 minutes in the media which contained insulin at 100µg/ml was the lowest (0.44 and 1.41)g/l in the normo and hyperglycaemic media respectively, which reflect that insulin at this concentration was the most effective on the stimulation of glucose uptake. The extract had the highest effect at 500µg/ml, the concentrations of glucose left after 90 minutes of incubation were found to be (0.38 and 1.31)g/l in the normoglycaemic and hyperglycaemic media respectively.

Conclusion: From the obtained results, it can be concluded that our extract seems to have an insulin-like effect on glucose uptake in liver slices isolated from Wistar rats.

Keywords: Diabetes Mellitus, Insulin, Glucose Uptake, Liver Slices, Traganum Nudatum

Assessment of the Ability of Candida Non-Abicans Species Isolated from Medical Devices at the University Hospital of Tlemcen (Algeria) to Form Biofilms

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Abstract:

Background: Biofilms are communities of microorganisms in contact with a surface. Although beneficial in most environments, fungal biofilms growing on implants or during chronic infections are reservoirs of pathogens that cause many nosocomial infections.

Methods: Despite the implementation of preventive measures, biofilms are difficult to eradicate because of their characteristic tolerance to high doses of antimicrobials. This study assesses the ability of some *Candida non-Albicans* species isolated from various medical devices collected at the University Hospital Centre of Tlemcen to form biofilms. The research for the formation of biofilms was carried out according to the protocol of Pierce and coll.

Results: The technique of crystal violet staining measures the biomass within the biofilm. The results obtained show that three out of eight species of *C. tropicalis* have the potential to form biofilms, as well as one species of *C. parapsilosis* on a set of three strains. *Candida famata* and *C. glabrata* are poorly biofilm-forming.

Conclusion: The quantity of biofilms produced varies according to the strains present in the environment.

Keywords: Biofilms, Healthcare-Associated Infections, *Candida* Non-Albicans, Medical Devices.

Evaluation of the Antioxidant Activity of the Ethyl Acetate Extract Prepared by Decoction of the Aerial Part of Salvia Officinalis

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Abstract:

Background: Oxidative stress is a triggering factor for a large number of diseases. Antioxidant compounds of natural and non-toxic plant origin are the subject of much research in the food and pharmacological field in the manufacture of drugs. The objective of this study was to evaluate the antioxidant activity of the aerial part of *Salvia officinalis* through its ethyl acetate extract prepared by the decoction method.

Methods: We described the secondary metabolites contained in this extract using the techniques described in 1998 and 1999. In addition, the quantification of the total polyphenols was carried out by the method of Folin-Cicalteu and the determination of flavonoids by aluminum trichloride (AlCl3) according to the technique described by Zhishen. The antiradical activity of the extract was studied by measuring the trapping power of the DPPH radical.

Results: From the logarithmic regression equation of the percent inhibition of the DPPH radical in terms of different extract concentrations, we determined the concentration necessary to reduce 50% of this free radical IC 50. Phytochemical screening demonstrated the richness of the extract in flavonoids, tannins, coumarins, and free quinones. The results of quantification revealed an amount of 450.51 ± 0.06 µg EGA / mg E of polyphenols and 300.77 ± 0.06 µg EC / mg E of flavonoids.

Conclusion: The antiradical activity was presented by an IC50 of 344.01 ± 8.18 µg / ml, which is remarkable and which reflects the antioxidant activity of the plant.

Keywords: *Salvia Officinalis*, Ethyl Acetate, Polyphenols, DPPH.

Comparative Study of Four Olive Oil Samples in terms of Quality and Polyphenols Quantity

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Abstract:

Background: The olive oil is a good source of lipid in the Mediterranean diet. The nutritional and therapeutic effects of olive oil were largely attributed to its fatty acid profile. However, the secondary metabolites (such as phenolic compounds) have been ignored. Polyphenols possess a wide range of biological activities that have not yet delivered all their secrets. They present well-established antioxidant and related inhibition of oxidation both in food (fat oxidation) and physiological (oxidative stress).

Methods: In this study, we attempted to evaluate the quality of olive preserved by determining different indices oil (acidity, saponification value, ester value, and peroxide value) and quantification rate of total polyphenols and flavonoids. Five olive oil samples from different years of storage are studied.

Results: The outcomes showed that the acidity percentages vary from 1.084 ± 0.006 to 8.178 ± 0% with a remarkable decrease in the year 2011 to 2015. The indices of saponification ranging from 185.32 to 454.41 mg KOH / g oil and the indices ester range from 182.63 to 438.14 mg KOH / g of oil. The indices of olive oil peroxide of the years 2011, 2013 and 2014 are very high than the standards of the International Olive Oil Council. They range from 27 ± 0.039 to 69 ± 0.007meq O2 / kg oil, which may reflect oxidation of the oils during its storage.

Conclusion: The quantitative estimation of total polyphenols (by the Folin-Ciocalteu) and total flavonoids (by the method of aluminum trichloride) revealed a decrease in the concentration of these compounds in the samples studied from the year 2011 to 2014.

Keywords: Olive Oil, Fat Index, Polyphenols, Flavonoids.

Study of the Anti-Inflammatory and Healing Properties of the Rhizomes of Carthamus Caeruleus L. (Asteraceae) Harvested in the Region of Tipaza

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Abstract:

Background: In some regions of Algeria, in Tipaza, natural medicine still occupies a place of choice in the treatment of many pathologies, among these natural remedies are quoted extracts of the rhizomes of Carthamus caeruleus L are used to treat burns with these astringent properties. Medicinal plant extracts contain a variety of phenolic compounds that are attributed to various biological activities (antioxidant and antimicrobial activity).

Methods: Our present study was conducted on the roots of *Carthamus caeruleus L.* harvested in the Tipaza region during the spring season. In order to promote this plant, we evaluated the anti-inflammatory activity and healing activity of the aqueous extract of the powder of the roots of *Carthamus caereulus L*. Studying the anti-inflammatory effect by measuring the volume of the edema of the paw that has received carrageenan 1%. Circular incision of 2 cm in diameter was made in Wistar rats to evaluate the healing activity of the aqueous pasty extract of the rhizomes of *Carthamus caeruleus L* at 100 mg/kg.

Results: They show that aqueous extracts of *Carthamus caeruleus L* rhizomes at the dose of 100 mg/kg are opposed to the increased edema induced by the carrageenan 1% in rats with a percentage of inhibition of edema volume of 87.34% at the 6th hour. Concerning the healing activity, the results show that the application of the aqueous extracts of the roots of *Carthamus caereulus L*.at dose of 100 mg/kg on the wounds causes their healing at the end of 14 days.

Conclusion: Aqueous extracts of the roots of *Carthamus caereulus L*. show healing properties and anti-inflammatory effects. These results could justify the use of this plant in traditional medicine against inflammatory diseases.

Keywords: Carthamus Caeruleus L. Rhizome Powder, Anti-Inflammatory Activity, Healing Activity.

International workshop on Genetic Items

Genotyping of *MEFV* and *SAA1* Genes and Their Correlation to the AA-Amyloidosis Development

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Abstract:

Background: Familial Mediterranean fever (FMF) is the most common autoinflammatory disease caused by recessive mutations in the *MEFV* gene. If not treated, FMF patients may develop renal AA-amyloidosis that leads to renal failure and death. Both mutations and polymorphisms in *MEFV* and *SAA1* genes, respectively, have been associated with AA-amyloidosis in several populations. In Algeria, as FMF is still under-estimate and misdiagnosed, genetic data on renal complication are largely lacking. We thus explored the contribution of *MEFV* and *SAA1* loci in the development of amyloidosis in Algerian patients with FMF.

Methods: This study included 64 unrelated FMF patients (21 without and 43 with renal amyloidosis) and 13 healthy controls. The entire exon 10 was sequenced after PCR amplification to detect *MEFV* mutations. Genotypes of *SAA1* locus (SAA1.1, SAA1.5, and SAA1.3) were determined by PCR-RFLP (restriction fragment length polymorphism).

Results: Analyze of *MEFV* gene showed that the percentage of homozygous for p.M694I mutation was significantly higher in patients with amyloidosis compared to patients without amyloidosis (p=0.032). The SAA1.1/1.1 genotype was significantly predominant in patients with amyloidosis compared to those without AA-amyloidosis (p=0.001) and controls (0.001). The SAA1.5/1.5 genotype was identified only in patients without amyloidosis and controls. The most patients with renal complications were homozygous for p.M694I and SAA1.1 alleles.

Conclusion: Our data suggest a positive correlation between the p.M694I/M694I and SAA1.1/1.1 genotypes and the development of AA-amyloidosis secondary to FMF in Algerian patients.

Keywords: AA-Amyloidosis, Familial Mediterranean Fever, *MEFV* Gene, *SAA1* Polymorphisms.

Familial Mediterranean Fever in Algeria - A Retrospective of Three Molecular Studies

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Abstract:

Background: Familial Mediterranean fever (FMF, OMIM 249100) is an autosomal recessive disease characterized by episodic febrile attacks and polyserositis. Renal AA-amyloidosis can complicate FMF. *MEFV* is the gene responsible for FMF and is involved in the regulation of inflammation. Although FMF is endemic in the Mediterranean region, its diagnosis is very recent in Algeria. We present here a retrospective of three genetic studies carried out on the Algerian patients.

Methods: 183 unrelated patients with symptoms suggestive of FMF were recruited from various hospitals between 2007 and 2015. Molecular studies included three cohorts of patients: 71 (35 males, 36 females), 84 (42 males, 42 females), and 28 (15 males, 13 females) with renal AA-amyloidosis. We searched for mutations in exon 10 of the *MEFV* gene by allele-specific PCR (p.M694V, p.M694I, p.M680I and p.A744S) and by resequencing the entire coding region of the same exon after PCR amplification.

Results: Molecular analysis identified 152 mutant alleles among 94/183 patients (51.36%). p.M694I was the most predominant mutation accounting for 63.2% of mutated alleles, followed by p.M694V (15.13%), p.M680I (13.81%), p.I692del (1.32%) and p.K695R (0.66%). More importantly, the M694I/M694I genotype was the most prevalent among the patients with AA-amyloidosis than the M694V/M694V genotype.

Conclusion: Our results provide the first genetic data concerning FMF in Algeria. They show that p.M694I mutation could be responsible for the severe phenotype for Algerian FMF patients.

Keywords: AA-Amyloidosis, Algeria, Familial Mediterranean Fever, P.M694I Mutation.

The Co-Existence of Rheumatoid Arthritis and Systemic Lupus Erythematosus Biomarkers: Is It Rhupus?

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Abstract:

Background: Rhupus is a rare clinical condition where rheumatoid arthritis (RA) and systemic lupus erythematosus (SLE) overlap and is characterized by the presence of erosive arthritis with symptoms and signs of SLE. This study aims to investigate the prevalence of anti-CCP antibodies in SLE patients from *CHU BLIDA* (*Immunology unit*) and its association with anti-DNA and Anti Sm, in order to make a diagnosis of rhupus among our patients.

Methods: Our retrospective study included 96 patients fulfilling the American College of Rheumatology (ACR) classification criteria for lupus. anti-CCP antibodies, anti-Sm were analyzed by ELISA, anti-DNA antibodies were determined by both IFI on *Crithidia luciliae* substrate and ELISA. The FR by Laser Nephelemetry. Inclusion criteria are the presence of at least one immunological marker of LES with anti-CCP. The sex ratio F / H is equal to 13/1, where the average age is 37 years.

Results: Anti-CCP was found in 14 patients (14.6%), 56.25% and 39.59% had positive anti-DNA and antiSm respectively; rheumatoid factors (RF) were positive in 27.08% of cases; anti-CCP / FR combination was found in 7.3% of cases. Besides, the combination of anti-CCP and anti-DNA was found in 12.5%. These two autoantibodies were simultaneously absent in 49.92% of cases. Arthritis was found in 80 patients. Our results concerning the prevalence of immunological and clinical markers of RA such as anti-CCP, RF and arthritis in our lupus patients corroborate with those of the literature.

Conclusion: Based on the presence of shared clinical features of RA and SLE along with the presence of anti-DNA and anti-CCP antibodies in our patients, our findings strongly support the contention that rhupus is a true overlap between RA and SLE. Despite being a rare entity, it is important to know the clinical and humoral elements that allow its early diagnosis, making it easier to start treatment in a timely manner and reduce its possible complications.

Keywords: Rhupus, Anti CCP, FR, Anti-DNA, Anti-Sm, PR, LES.

NOD2 Gene Status in Pediatric and Adult Crohn Disease Patients in Algerian Population

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Abstract:

Background: Chronic Inflammatory Bowel Diseases (IBD), including Crohn disease (CD) and ulcerative colitis (UC) are gastrointestinal disorders under the influence of a complex genetic basis. One hundred sixty-three predisposition loci were identified by genome-wide association (GWAS) studies, refocusing the pathogenesis of IBD on immunity genes. The *NOD2* gene has been widely implicated in the pathogenesis of IBD in different geographical populations. Three most common mutations within NOD2 gene were selected, namely SNP8, C/T (R702W variant), SNP12, G/C (G908R variant) and SNP13, (1007fsinsC variant). We investigated these three SNP in a pediatric Algerian cohort for the first time, since no previous association studies between pediatric IBD and the NOD2 gene were available for the Algerian population.

Methods: A case-control study was performed in the pediatric IBD population. PCR-RFLP was used to detect the three NOD2 gene mutations in 46 CD patients and 100 healthy control subjects. All samples were genotyped for the NOD2 gene Polymorphisms by the PCR-RFLP method. Statistical study was performed by the Fisher exact test or Chi-2 using the GraphPad Prism 7.0 software. Then data from the pediatric cohort were compared to our precedent published data from a case-control study performed on a cohort including 132 IBD patients and 114 healthy control subjects.

Results: In the pediatric cohort, there is no statistically differences in allelic frequencies between cases and controls respectively R702W (6.36% vs. 6.38%; p=1), G908R (2.72% vs. 1.06%; p=0.6) and 1007fsinsC mutation was found neither in the CD patients nor in control. In the adult cohort, the R702W allelic variant showed the highest frequency in CD patients (8%) (p = 0.09, OR = 3.67, 95%CI: 0.48-4.87) but its frequency was also high in controls (5%) (p = 0.4; OR = 1.4; 95%CI: 0.65-3.31). Likewise, G908R and 1007fsinsC mutations showed similar frequency in CD patients and in controls (3% *vs.* 2%; p= 0.5; OR=1.67; 95%CI: 0.44-6.34; 2% *vs.*1%; p=0.4, OR=2.69; 95%CI: 0.48-14.87, respectively). The total frequency of the mutated NOD2 chromosomes was higher in adult CD patients (13%) than in pediatric CD patients (9%). In our precedent study on the adult cohort, we have confirmed that the NOD2 gene is significantly associated with a specific clinical sub-phenotype in CD, indicating that the NOD2 gene is involved in IBD susceptibility across Algerian adult population. However, we failed to show any association between the three variants of the NOD2 gene across Algerian pediatric CD patients.

Conclusion: In our precedent study, we have confirmed that the NOD2 gene is significantly associated with a specific clinical sub-phenotype in adult CD patients. Here, our results show no association of NOD2 gene variants with pediatric MC. The low penetrance of the at-risk genotypes we observed indicates that the NOD2 gene does not delineate a subgroup of simple Mendelian diseases.

Keywords: IBD, PCR-RFLP, SNP, NOD2, Pediatric Crohn Disease.

Apolipoprotein E Genotypes in Alzheimer's Disease in Central Algerian Population

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Abstract:

Background: Alzheimer's disease (AD) is a progressive and fatal neurodegenerative disorder associated with cognitive decline and is the most common form of dementia in the elderly. Early-onset familial AD accounts for less than 1% of AD cases and develops before the age of 65 years because of mutations in either the APP gene or genes encoding presenilin 1 (PSEN1) or presenilin 2 (PSEN2). The majority of sporadic AD cases are referred to as late-onset AD (LOAD) because they occur late in life (>65 years). Apolipoprotein E (APOE) polymorphic alleles are the major genetic risk factor for AD. The human APOE gene exists as three polymorphic alleles, ε2, ε3, and ε4, with a worldwide frequency of 8%, 78%, and 13%, respectively, with ε4 reaching frequencies of 40% in AD patients. The purpose of this preliminary study was to determine ApoE genotype status since no previous association studies between LOAD and ApoE gene were available for the Central Algerian population.

Methods: The cohort of our study was composed of 47 AD patients recruited from the Neurology Department of Frantz Fanon Hospital of Blida. Forty-seven controls with no type of dementia were also included in the study. All samples were genotyped for the ApoE Polymorphisms by PCR-RFLP method. Statistical studies can use the Fisher exact test or Chi-2 using the GraphPad Prism 7.0 software.

Results: The results show that the genotype ε3/ε3 is most common in both groups followed by the heterozygous genotype ε3/ε4 which showed an increased frequency in patients compared to controls (27.66% vs. 12.77%, OR=3.66, IC=0.89-7.9, p=0,11). Although rare, all other possible genotypes have been observed in our cohort, namely ε2/ε2, ε2/ε3, ε2/ε4 and ε4/ε4. The ε2/ε4 genotype was observed only in AD patients, while the ε2/ε2 genotype was observed only in controls. As expected, the homozygous genotype ε4/ε4 was more frequent in AD patients, compared to controls (6.38% vs. 2.13%, respectively OR=2.64, IC=0.36-37.33; p=0,33). At the allelic level, ε4 allele was significantly associated with AD compared to controls (21,28% vs. 4,26% ; OR= 2.75, 95% CI= 1.109-6.35; p = 0.02, respectively), while the ε2 allele seems to be protective (4,26% vs. 9,57%, OR = 0.49 ; 95% CI=0.14-1.66 ; p=0,38, respectively), but without statistical significance. In population-based studies, the ApoEε4-AD association was weaker among African Americans (ε4/ε4, OR 5.7) and Hispanics (ε4/ε4, OR 2.2) and was stronger in the Japanese population (ε4/ε4, OR 33.1) compared with Caucasian cases (ε4/ε4, OR 12.5). The results obtained in our preliminary study indicate that the ApoEε4-AD association in the Central Algerian population is similar to that observed in the Mediterranean populations.

Conclusion: We have presented, for the first time in the North Central Algerian population, the association of the ε4 allele with AD, which could be of great use in the diagnosis but also the follow-up of patients with this disease.

Keywords: Alzheimer's Disease, Apolipoprotein E, APOE Gene, ε4 Allele.

Autophagy Genes (ATG16L1/IRGM) and IBD: Involvement of the ATG16L1 Gene in Algerian Patients with Crohn's Disease

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Abstract:

Background: Chronic Inflammatory Bowel Diseases (IBD) including Crohn's disease (CD) and ulcerative colitis (UC) are gastrointestinal disorders under the influence of a complex genetic basis. One hundred sixty-three predisposition loci were identified by genome-wide association (GWAS) studies, refocusing the pathogenesis of IBD on immunity genes. Autophagy is a fundamental mechanism in the maintenance of intestinal homeostasis. Failures of this mechanism appear to be a major risk factor in the setting up of chronic intestinal inflammation. Two single nucleotide polymorphisms (SNPs) within two genes, were selected namely (rs2241880 A→G) for ATG16L1 and (rs10065172 C→T) for IRGM.These two genes are both involved in the autophagy mechanism. We investigated these two SNP in an Algerian cohort for the first time since no previous association studies between IBD and the two studied genes were available for the Algerian population.

Methods: A case-control study was performed on a cohort including 95 Algerian patients with Crohn's disease and ulcerative colitis versus 116 Controls. Genotyping of the cohort involved allelic discrimination by TaqMan SNP Genotyping Assay.

Results: A statistically significant association of the rs2241880 A→Gmutation of the ATG16L1 gene was demonstrated in IBD (p = 0.04) and, more particularly in Crohn's disease (p = 0.03).The presence of this mutation would increase the risk of Crohn's disease by a factor of 2 in its GG homozygous mutated form (OR = 2.11 95% CI (1.07-4.16)). No significant associations were found for the rs10065172 C→T mutation of the IRGM gene.

Conclusion: Our data highlight the involvement of the ATG16L1 gene in the genesis and/or evolution of IBD cases, notably Crohn's disease, indicating the impact that deregulation of the autophagy mechanism could have on the Algerian population. Nevertheless, it would be interesting to expand the sampling and carry out the functional studies to elucidate the impact of the deregulation of the ATG16L1 gene in IBD.

Keywords: Chronic Inflammatory Bowel Diseases, IBD, PCR-RFLP, SNP, ATG16L1, IRGM, Crohn's Disease,

Pathophysiology of IBD: Genes and Environment

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Abstract:

Background: Chronic inflammatory bowel disease (IBD), Crohn's disease (CD) and ulcerative colitis (UC) are complex and multifactorial disorders characterized by the presence of chronic inflammatory lesions localized in the gastrointestinal tract.

Methods: Recent data indicate that genetic susceptibility, the environment, the intestinal microbiota, and the immune system of the host are all factors involved in the pathogenesis of IBD. Genetic susceptibility of IBD is polygenic involving no less than 200 loci. 20 to 25% of IBD are diagnosed before the age of 16. The age of diagnosis is an important indicator of the type of IBD and the associated genetic characteristics.

Results: Pediatric forms are severe with early-onset diagnosis (EO-IBD, under the age of 5) or very early-onset diagnosis (VEO-IBD, under the age of 2). Most of the VEO-IBD forms are monogenic diseases caused by rare genetic variants that have a powerful impact on gene function. In "conventional" IBD, the importance of the intestinal microbiota and the environment is confirmed by the partial contribution of genetic factors in the pathogenesis of IBD.

Conclusion: Recent data have shown that epigenetic mechanisms may be involved in the development and progression of IBD. Future studies could provide new insights into the pathogenesis of IBD.

Keywords: IBD, Pathogenesis, Genetic, Epigenetic.

Workshop on Education, publication and ethics

Approaches to Global Health Education

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Abstract:

Background: Health care professionals (HCPs) are generally expected to hone their knowledge and skills and stay up to date through undertaking continuing professional development. Within global health, these skills include being able to operate in a multi-cultural, multi-ethnic society and demonstrate leadership, whether at the community, national or international level. Sharing knowledge across cultures and continents through the creative use of technology has the potential to help HCPs achieve this goal.

Method: Use of blended learning techniques (e.g., by means of distance learning with mentoring support, webinars and tutorials) means that HCPs anywhere in the world can share best practices and take part in live discussion without the need for extensive travel and time away from home. This reduces cost and carbon footprint while at the same time improving access to continuing professional development, avoiding limitations that come from static online platforms and learning environments.

Results: Blended learning that utilizes modern classroom technology can facilitate face-to-face contact with peers and mentors, albeit in a virtual rather than a physical environment. This does not exclude the possibility of travel (e.g., for short periods of study such a summer school), but it should not require it.

Conclusion: Global health is particularly well suited to these learning styles in that the subject matter readily crosses boundaries, scientifically as well as culturally. HCPs actively working in this field should, therefore, benefit from participation in learning environments that foster interconnected working, complete with the potential to help in developing long-term professional relationships and collaborations.

Keywords: Global Health Education, Blended Learning, Continuing Professional Development, Health Care Training.

Acknowledgment: The author thanks Professor Raman Bedi (London) for his cooperation in developing some of these ideas.

Empathy and the Quest for Social Ethics - Their Relevance to Contemporary Healthcare. The European Perspective

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Abstract:

Social participation exists due to empathy for oneself. A single unit is far more vulnerable to death and the vagaries of nature than the collective. Nevertheless, living with others is a dangerous affair, best understood when going through a history of power struggles and bloodshed. To co-habit successfully, we need socially applied ethics that counter the egocentric design of human nature. In Europe, ethics has been brought to us by divine intervention. Tensions within evolving societies, born of intolerable injustice in the temporal world, necessitated the codification of God's ethical word into law upheld by the living. The secularization of the state progressed to create an inclusive society, reflective of difference. Life spans were prolonged, the quality of life - bettered. A single glitch occurred in the system. Social ethics outrun the state's ability to adjust financially to the changes. Today, complaints are being voiced as to a strain in empathy provision towards society's main working unit – the individual. Sadly, the brunt of the criticism has been absorbed by Europe's healthcare system. In places, the cries of patients' indignation have been matched by shocking, self-promoting profiteering.

Keywords: Empathy, Social Ethics, God, Patients, Healthcare, Europe

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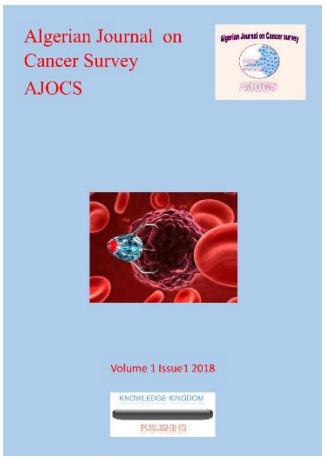

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