

Archives of Pathology and Clinical Research

Volume - 7, Issue - 1

Research Article

Published Date:-2023-12-28 17:14:33

[Modeling the Risk of Liver Cancer in Adults: A Machine Learning Investigation into the Role of Obesity and Overweight](#)

Background: Liver cancer is a global health concern, with overweight and obese individuals exhibiting an increased risk of its development. Understanding the interplay between obesity-related factors and liver cancer incidence is crucial for early prediction and intervention.

Aim: The aim of this investigation was to construct and validate an extreme gradient boosting (XGBoost) based machine learning model for the purpose of establishing a one-year liver cancer risk prediction system specifically tailored to overweight and obese patients. In addition, this study sought to compare the predictive performance of the XGBoost model with those of a random forest model and a logistic regression model, while also identifying the most influential predictive features for liver cancer incidence.

Methods: A comprehensive retrospective analysis was conducted on MIMIC III data comprising 2,354 patients. To predict the risk of liver cancer development, three machine learning models were developed: XGBoost, random forest, and logistic regression. Feature selection was executed using a stepwise regression procedure encompassing both forward selection and backward elimination.

Results: The stepwise regression technique unveiled 14 predictive factors for liver cancer incidence. Among the patient cohort, 132 individuals developed liver cancer within a year of follow-up, while 2,222 did not. Notably, most liver cancer cases occurred in male patients (60%). Statistically significant differences were observed between patients with liver cancer and those without, in terms of age, gender, total bilirubin, platelet, albumin, chloride, potassium, sodium, prothrombin time (PT) and alanine aminotransferase (ALT). The XGBoost model exhibited an impressive area under the receiver operating characteristic curve (AUROC) of 99%, Random Forest (RF) of 99%, and Logistic Regression (LR) of 90%. In a multivariate analysis, total bilirubin, creatinine levels, age, gender, ALT, alkaline phosphate (ALP), PT, calcium, and chloride emerged as independent predictors for liver cancer incidence.

Conclusion: The XGBoost model demonstrated superior predictive performance when compared to the RF and LR models. If corroborated through prospective studies, the XGBoost model may prove to be a valuable tool for the early prediction of liver cancer risk in overweight or obese individuals. Such predictive capabilities could, in turn, facilitate the implementation of timely preventive interventions against liver cancer.

Case Presentation

Published Date:-2023-12-05 11:13:26

[A Perplexing Case of Genito-urinary Tuberculosis in an 83-Year-Old Woman with Increased Levels of Tumor Markers: A Case Report](#)

Background: Tuberculosis (TB) is a significant global health problem, and extrapulmonary TB can present with no specific clinical or radiographic findings. Genito-urinary TB is often associated with elevated tumor markers and can be misdiagnosed as ovarian/fallopian tube carcinomas, especially in elderly female patients, as genitourinary TB commonly affects women of reproductive age.

Objective: We present a rare case of genito-urinary TB in an elderly female patient who was initially misdiagnosed with ovarian cancer with metastasis.

Case presentation: An 83-year-old woman with a medical history of diabetes and hypertension presented with complaints of abdominal distension. Diagnostic imaging revealed lesions in the ovaries and omentum and tumor markers were elevated, leading to a suspicion of ovarian cancer with metastases to the omentum. The patient underwent a diagnostic laparotomy and surgical removal of ovaries, fallopian tubes, and the lesion of the greater omentum. However, no malignancy was found during the morphological evaluation. Further histopathological examination confirmed the final diagnosis of genito-urinary tuberculosis, and the patient received anti-TB drugs. The postoperative period was uneventful, and tumor marker levels decreased.

Conclusion: As the clinical presentation of genito-urinary TB can mimic ovarian cancer, a histopathological examination should be performed for differential diagnosis, thereby reducing the possibility of inaccurate treatment. This case report highlights the importance of considering genito-urinary TB as a differential diagnosis in elderly female patients presenting with elevated tumor markers, abdominal distension, and suspected genital malignancy. It is crucial to carefully evaluate these cases and explore the possibility of genital TB as an alternative diagnosis, given the overlapping clinical presentation. This highlights the importance of a comprehensive diagnostic approach that includes considering TB in addition to malignancy, even in the context of elderly female patients.

[Expression of Collagen VI, Anticollagenase, Laminin, MM9, Claudins 1 and 5, N and E Cadherins in Choroid Plexus Tumors](#)

Background: CPTs are rare intraventricular papillary neoplasms derived from the choroid plexus epithelium.

Anti-collagenase and extracellular matrix which have not been expressed in brain tumors.

Objective: The purpose of this study was to investigate the expression levels of collagen type VI, anti-collagenase, laminin, MM9, claudins 1 and 5, N and E cadherins, and collagen VII, tejido, and collagen degradation enzyme complexes in choroid plexus tumors.

Materials and methods: We studied the expression of adhesion molecules, extracellular matrix, and anticollagenase with an immunohistochemistry approach and electron microscopy analysis in 42 choroid plexus tumors.

Results: 28(67%) were choroid plexus papillomas, 8 (19%) were atypical choroid plexus papillomas and 6 (14%) were choroid plexus carcinomas. The Ki67-li and MVD increased from CPC to ACPP, being the highest in malignant tumors as well as a strong immunoexpression of anti-collagenase and were inverse correlation with claudin 5, E, and N cadherin and collagen IV immunoexpressions which added further significant information to the prognosis and varied according to the histologic classification. By ultrastructure, the loss of basal membrane and cilia, disorganization, and proliferation of ECM were observed in CPC. Cerebral homeostasis largely results from the ability of both the Blood–Brain Barrier (BBB) at the brain microvascular endothelium and the Blood–Cerebrospinal Fluid Barrier (BCSFB) at the epithelium of the Choroid Plexuses (CPs), to control the composition of the CSF and cerebral extracellular fluid. Under expression of the tight junction proteins occludin, claudin-1 and claudin-5 are key molecular abnormalities responsible for the increased permeability of tumor endothelial tight junctions.

Conclusion: The loss of basement membrane and ECM overexpression could be considered as a poor prognosis predictor in CPT. Anti-collagenase and MMP9 overexpression could be related to basal membrane and BBB plasticity in CPTs.

Case Presentation**Published Date:-2023-10-11 14:33:33**[An Interesting Autopsy Case Report of Acute Respiratory Failure](#)

Vasculitis is a group of rare but potentially serious disorders characterized by inflammation of blood vessels. This condition can affect blood vessels of all sizes, ranging from small capillaries to larger arteries.

Research Article**Published Date:-2023-08-16 11:25:05**[Assessment and Correlation of Serum Urea and Creatinine Levels in Normal, Hypertensive, and Diabetic Persons in Auchi, Nigeria](#)

Background/Aim: There has been a progressive rise in the incidence and prevalence of End Stage Renal Disease (ESRD). It has also been observed that the most important reasons for a rapid increase in Chronic Kidney Disease (CKD) patients are the rapidly increasing worldwide incidence of diabetes and hypertension. The present study evaluates the effect of diabetes, hypertension, and comorbid state of hypertension and diabetes (hypertensive-diabetic) on renal function using serum creatinine and urea as markers.

Method: A total number of 120 persons were recruited for the research; 30 controls, 30 hypertensive, 30 diabetic, and 30 hypertensive-diabetic persons. Of the 30 control persons, 18 were females and 12 were males; of the 30 hypertensive subjects, 17 were females and 13 were males; of the 30 diabetics subjects, 20 were females and 10 were males, whereas of the 30 hypertensive-diabetic subjects, 21 were females and 9 were males. In total, there were seventy-six (76) females and 44 males. The respondents were pulled from Central Hospital (Auchi) Diabetic and General Clinic and Auchi Polytechnic Cottage Hospital. Verbal consent was sort and questionnaires were used to extract information regarding biodata and patients' history of diabetes and hypertension. Height and weight were measured, and blood pressure was determined taken. Blood samples were collected into fluoride oxalate and lithium heparin bottle for the assessment of FBS and (serum urea and creatinine) respectively.

Results: The mean (\pm SD) serum creatinine was higher in the hypertensive-diabetic group (2.08 ± 1.06) and declined as follows: diabetic group (1.75 ± 1.01), hypertensive group (1.34 ± 0.96) and control group (0.70 ± 0.14). The mean (\pm SD) serum urea was also found to be higher in the hypertensive-diabetic group (17.5 ± 9.06) and declined as follows: diabetic group (14.5 ± 6.13), hypertensive group (12.7 ± 6.23) and control group (7.18 ± 5.06). There was a positive correlation between serum creatinine and fasting blood sugar The study also established a positive correlation between serum creatinine and blood pressure but not between serum urea and blood pressure with r values of 0.31 and 0.16 respectively.

Conclusion: Good control of blood glucose and blood pressure levels reduces the likelihood of the development of renal impairment which is usually associated with both diabetes and hypertension. Co-morbidity of diabetes and hypertension poses a higher risk of developing renal disease than individual problems of diabetes and hypertension. Serum creatinine and serum urea are important biomarkers for renal impairment hence the two should be monitored on a regular basis for diabetic and hypertensive patients and much more frequently for hypertensive-diabetic patients.

Research Article

Published Date:-2023-07-24 14:22:48

[Impact of COVID-19 on Laboratory Health Staff in an Indian Tertiary Care Hospital](#)

Background: The COVID-19 pandemic has resulted in significant burdens globally. Healthcare workers (HCWs), at the heart of the unparalleled crisis of COVID-19, face challenges treating patients and doing testing for COVID-19: reducing the spread of infection; developing suitable short-term strategies; and formulating long-term plans. We aimed to assess the psychological impact of COVID-19 on Laboratory health staff.

Material and methods: Between February - March 2021, 72 laboratory staff workers of a tertiary care teaching hospital were invited to fill out a questionnaire regarding concerns and worries about the novel coronavirus pandemic, along with a coping scoring system and General health questionnaire level (GHQ-12) survey.

Results: Out of 72 laboratory health staff who completed the survey questionnaire, 10 were faculty members, 17 were residents (including senior residents, junior residents, and demonstrators), 39 were lab technicians, followed by 4 were attendants and 2 were data operators. Laboratory staff workers with an age group range from 30 years - 60 years had a higher level of depression symptoms than respondents with 20 years - 29 years of age. Similarly, the symptoms of anxiety were noted to be significantly higher among female respondents and respondents with age >30yrs. The most frequent concern was transmitting the infection to family than to themselves only. A considerable number of laboratory staff workers utilized online psychological resources to deal with their psychological distress.

Conclusion: The findings of this survey recognize the various problems faced by laboratory health workers during the period of COVID-19 which affect their working ability. Therefore, in the future, we have to implement such strategies that enhance the performance of laboratory workers, boost their energy level, and encourage them to take care of themselves, in times of such crisis.
