

# Oman Medical Specialty Board Research Forum 2020/2021: Abstracts

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## Biochemical, Hematological, and Immune Biomarkers as Predictors for COVID-19 Progression

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### ABSTRACT

**Objectives:** To find out the biochemical, hematological, and immune biomarkers on admission that can predict COVID-19 progression and severity. **Methods:** This is a retrospective cohort study conducted on all confirmed COVID-19 cases hospitalized at Royal Hospital, Oman from February 24, 2020 to July 30, 2020. The demographic, clinical, and laboratory data were collected from hospital information system. Minimum sample size was calculated from previous study (Wang D et. al, 2020) as 120. Patients were divided into two groups: non intensive care unit (ICU) admitted group and ICU admitted group. A  $p$ -value  $< 0.050$  was considered significant. **Results:** Out of 445 patients, 276 (62.0%) were males and 169 were (38.0%) females; 259 (58.2%) were admitted in COVID-19 wards whereas 186 (41.8) were in ICU. Patients with diabetes (odds ratio (OR) = 1.84, 95% confidence interval (CI): 1.26-2.69), liver diseases (OR = 2.18, 95% CI: 1.10-4.3), and respiratory diseases (OR = 2.0, 95% CI: 1.1-3.7) were more likely admitted to ICU compared to those without comorbidities. Among ICU versus non-ICU patients, there were remarkable differences in on-admission laboratory blood/serum parameters: total white blood cells (WBC) count ( $p < 0.001$ ), lymphocytes count ( $p < 0.001$ ), C-reactive protein (CRP) ( $p < 0.001$ ), ferritin ( $p < 0.001$ ), corrected calcium ( $p < 0.001$ ), interleukin 6 ( $p < 0.001$ ), D-Dimer ( $p < 0.001$ ), alanine transaminase (ALT) ( $p < 0.001$ ), lactate dehydrogenase (LDH) ( $p < 0.001$ ), albumin ( $p < 0.001$ ), and troponin ( $p < 0.050$ ). **Conclusions:** The current study identified presence of comorbidities (diabetes, liver diseases and respiratory diseases) and on-admission laboratory blood and serum parameters (WBC, lymphocytes, CRP, ferritin, corrected calcium, IL-6, D-diameter, ALT, LDH, albumin, and troponin) associated with ICU admission.

## Prevalence of Autoimmune Diseases among Vitiligo Patients Attending Al-Nahdha Hospital in Oman

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### ABSTRACT

**Objectives:** To assess the prevalence of eight autoimmune disorders (autoimmune thyroid diseases, rheumatoid arthritis, systemic lupus erythematosus, inflammatory bowel disease, Addison's disease, type 1 diabetes mellitus, psoriasis, and alopecia areata) among vitiligo patients attending Al-Nahdha Hospital. In addition, we aimed to assess the association of vitiligo with those eight autoimmune disorders in comparison with a control group of patients with contact dermatitis. **Methods:** This is a retrospective study involving cross-sectional design and record review in Dermatology Department, Al-Nahdha Hospital, Muscat, Oman from May 2018 to December 2018. A total of 150 patients who attended the outpatient clinics with vitiligo of all ages and both genders were included in the study. The patients were selected from an electronic medical database (Al-Shifa System). All relevant information including type of vitiligo, family history of vitiligo, family history of autoimmune diseases, and presence of autoimmune diseases were collected from the database. Patients (n = 150) with contact dermatitis were studied as a control group. The information about the presence of autoimmune diseases in this group was collected from the database as well. The collected data were entered into EpiData entry software and were analyzed using SPSS software version 24. **Results:** The researchers studied 150 cases of vitiligo, 82 males and 68 females. The average age was 30. Family history of vitiligo was present in 8.7% of cases while family history of other autoimmune diseases was present in 4.7%. Moreover, 12.7% of vitiligo patients had another autoimmune disease, of which 9.3% had autoimmune thyroid disease whereas in the control group (150 patients with contact dermatitis), only 4.7% were reported to have an autoimmune disease. **Conclusions:** There is an increased prevalence of autoimmune diseases among vitiligo patients in Oman. Besides, the association between vitiligo and other autoimmune diseases is clear in our study. Autoimmune thyroid disease was the most frequent associated disease.

## The Prevalence of Malignant and Benign Cutaneous Lesions Excised by Plastic Surgery Department at Khoula Hospital

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### ABSTRACT

**Objectives:** To estimate the prevalence of malignant and benign cutaneous lesions excised by plastic surgery department. Moreover, we aimed to categorize the available data according to the histopathological findings.

**Methods:** This is a retrospective cross-sectional study of patients with cutaneous lesions reviewed for surgical excision by plastic surgery department in Khoula Hospital in five-year period from January 2015 to December 2019. All patients included across all age groups. The data were collected from Al-Shifa system and were analyzed using Excel and SPSS version 26.0 programs. **Results:** The total patients analyzed were 2650, patients who had soft tissue tumors were excluded and the remaining 1800 patients with primary cutaneous disorders were included in the study. Out of 1800 patients, 1618 (89.9%) had benign skin lesions, 177 (9.8%) had malignant lesions. The mean age distribution was 36.6. Majority of the lesions excised were melanocytic nevus (n = 613; 34.1%) followed by epidermal inclusion cysts (n = 242; 13.4%), trichilemmal cysts (n = 119; 6.6%), and basal cells carcinoma (n = 116; 6.4%). Body sites excised lesions were head and neck (n = 1404; 78.0%), limbs (n = 225; 12.5%), and trunk (n = 171; 9.5%). Most of the malignant tumors were diagnosed in patients aged > 60 years with a mean age of 65 years (n = 126; 71.2%). There were 166 (93.8%) cases of the malignant tumors identified among Omani patients and only 11 (6.2%) cases were from other nationalities. The commonest malignant tumor found was basal cell carcinoma (BCC) (n = 116), followed by squamous cell carcinoma (n = 35). Malignant lesions were mostly over the head and neck (n = 143; 80.8%), limbs (n = 27; 15.3%), and trunks (n = 7; 4.0%). Nose was the most common affected site with 61 malignant cases, and the next commonest site was cheeks (n = 35). **Conclusions:** The most common excised skin lesions were benign melanocytic nevi. The commonest malignant tumor was BCC and this is consistent with those found in the literature. Public awareness is very important about skin malignancies especially for old people to seek medical attention if any suspicious skin lesion arises on sun-exposed areas on the face especially nose and cheeks.

## Predictors of Alternative Diagnosis than Appendicitis in Patients Who had Contrast Computed Tomography Scan Abdomen for Suspected Appendicitis

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### ABSTRACT

**Objectives:** To look for predictors of alternative diagnosis other than appendicitis in all patients who had contrast computed tomography (CT) of the abdomen that was done for clinically suspected acute appendicitis.

**Methods:** This is a retrospective cross-sectional study involving chart review of patients who underwent contrast CT abdomen for suspected acute appendicitis from January 2015 to December 2018 in the emergency department (ED) of Sultan Qaboos University Hospital, Oman. Variables used were demographics, presenting complaint, physical examination findings, associated symptoms, vital signs, inflammatory markers, renal and liver function tests, CT scan, and ultrasound scan results. Final diagnosis as written by the treating physician was used to determine the alternative diagnosis. Chi-square test and multivariate binary logistic regression analysis were used to analyze the data. Two-tailed  $p$ -value < 0.050 was considered statistical significance. **Results:** Out of 740 patients included, 231 (31.2%) patients were diagnosed with acute appendicitis at CT scan. An alternative diagnosis other than appendicitis was suggested in 509 (68.6%) patients. The most common broad categories of the alternative diagnosis group were gastrointestinal conditions (45.5%), gynecologic conditions (22.7%), genitourinary conditions (13.7%), and hepatobiliary conditions (2.4%). Using multivariate binary logistic regression analysis, we found that epigastric pain as an associated symptom is the strongest predictor ( $p < 0.0001$ ) among the variables used to test the predictors of alternative diagnosis with an odds ratio of 6.5. Other predictors were female gender ( $p < 0.0001$ ), constipation ( $p < 0.014$ ), diarrhea ( $p < 0.003$ ), absence of rebound tenderness ( $p < 0.007$ ), absence of rovsing sign ( $p < 0.004$ ), presence of leukocyte in urine analysis ( $p < 0.012$ ), and normal C-reactive protein ( $p < 0.0001$ ). Among patients with alternative diagnosis 272 (53.4%) patients discharged from ED. **Conclusion:** There are multiple predictors that the ED physician can use to select patients with suspected appendicitis who need alternative diagnosis to be ruled out, aid to less invasive investigations (i.e. CT) and faster ED discharge. Further prospective studies needed to look at the predictors of alternative diagnosis in patients with suspected acute appendicitis.

## The Role of Blood Eosinophilia on the Severity and Prognosis of Chronic Rhinosinusitis with Nasal Polyps in Omani Adults

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### ABSTRACT

**Objectives:** To determine the role of blood eosinophilia on the severity and prognosis of chronic rhinosinusitis with nasal polyps in Omani adults using internationally accepted endoscopic and radiological scoring systems. This will help on identifying the patients with severe disease and at risk of treatment resistance and recurrence after surgery. **Methods:** This is a retrospective cohort study, conducted in the division of Otolaryngology, Head, and Neck Surgery, Department of Surgery, Sultan Qaboos University Hospital. This study included 350 patients who underwent endoscopic sinus surgery (ESS) for nasal polyps from January 2013 to January 2018. Preoperative Lund-Mackay computed tomography (CT) scores and Lund-Kennedy endoscopic scores which indicate disease severity were obtained from the medical files of the patients. Patients were grouped as high peripheral eosinophils count and low peripheral eosinophil count. The relationship of Lund-Mackay CT scores and Lund-Kennedy endoscopic scores with high and low blood eosinophil count was investigated. The rate of revision ESS has been compared between the two groups. Data analyses were performed using the IBM SPSS statistics version 21.0 for windows. Two groups comparison were performed using the *t*-test for normally distributed continuous variables. Chi-square test was used for the comparison of categorical variables. A *p* < 0.050 was considered statistically significant. **Results:** Out of 350 patients included in the study, 204 (58.3%) were males and 146 (41.7%) were females, with the mean age of 37.12 years. Two hundred thirty-seven (67.7%) with low peripheral eosinophil count and 113 (32.3%) with high peripheral eosinophil count. One hundred four patients underwent revision ESS, 63 (60.6%) of them had high peripheral eosinophil count. The mean CT score and endoscopic score preoperatively was higher in patients with high peripheral eosinophil count than those who have low peripheral eosinophil count (*p* < 0.010). There was a significant association between the revision surgery and the eosinophil count category (*p* < 0.010). **Conclusions:** The findings of this study revealed a positive correlation of the clinical severity of the chronic rhinosinusitis with

nasal polyps with the peripheral eosinophilia in our patients. This will help in predicting the prognosis and response to the medical and surgical intervention. However, peripheral eosinophilia must be validated and standardized before using it as a prognostic factor. For this, more controlled and prospective studies need to be conducted.

## Parental Knowledge, Attitudes, Practices Regarding Antibiotic Use for Upper Respiratory Tract Infections in Children

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### ABSTRACT

**Objectives:** To assess parental knowledge, attitudes, practices regarding antibiotic use for children with upper respiratory tract infections (URTIs). **Methods:** A multi-centre cross-sectional survey was carried out from September 2018 to April 2019 at 15 randomly selected primary health centres in Muscat, Oman. A total of 384 parents with children under 12 years old were recruited. A validated questionnaire was utilized to determine their knowledge, attitudes, and practices with regards to antibiotic use for children with URTIs. Data were analysed using the Statistical Package for the Social Sciences version 22. **Results:** All 384 parents participated in the study with 100% response rate. Almost half of the participants (n = 173; 45.1%) agreed that antibiotics were the first and best treatment for URTIs in children. One hundred eighty-four (47.9%) parents reported that influenza symptoms in children improved more rapidly after the administration of antibiotics and 203 (52.9%) believed that antibiotics prevented complications. The majority (n = 219; 57.0%) never gave their children antibiotics without a prescription and 291 (75.8%) never used leftover antibiotics. Most participants (n = 233; 60.7%) stated that it was the doctor's decision to prescribe antibiotics, 192 (50.0%) had never asked a physician to prescribe antibiotics for their children and 256 (66.7%) had never changed doctors because they did not prescribe antibiotics. **Conclusion:** Overall, this study found that parents had confidence in their healthcare providers; however, it also showed the extent of their lack of knowledge regarding the use of antibiotics for children with URTIs. There is a need for both public- and healthcare professional-oriented educational initiatives to promote rational antibiotic usage in Oman.

## Are We Over Treating Ductal Carcinoma in Situ?

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### ABSTRACT

**Objectives:** To determine whether over treatment of the ductal carcinoma in situ (DCIS) occur with general assessment of its outcome in Omani population. In addition, we aimed to assessed whether DCIS and invasive cancer could be treated the same in term of the margin width and to analyzed the relation between the margin width and the recurrence rate of the disease either as DCIS or invasive tumor. **Methods:** A single-institution qualitative retrospective cohort study including all patients who were managed as DCIS at Royal hospital using surgical intervention between 2006 and 2019. Patients who have invasive component within the DCIS were excluded in the study. Patients who have invasive component within the DCIS were excluded in the study. Clinicopathological data were collected from Al Shifa3, the patient hospital record system. There were 364 patients diagnosed with DCIS and 287 were excluded due to the presence of invasive component or because follow-up was done in another hospital. Seventy-seven cases were histologically reviewed, and different factors associated with primary operation selection, re-excision, presence of residual tumour in the re-excision specimens, use of radiotherapy, and hormonal therapy were analysed. Sample were divided into three groups according to their pathological analysis either positive margin, close margin (0.1 mm to 1.9 mm), and negative margin group (> 2 mm). The recurrence rate for each group were assessed. A *p*-value < 0.050 was considered significant. **Results:** Seventy-seven patients with pure DCIS were included in the present analysis, the mean age was 47.9 years. Ten (13.0%) patients had a positive margin, which is 0 width margin at the primary operation, 29 (37.7%) patients had a close margin ranged between 0.1 to 1.9 mm, and 33 (42.9%) patients had a clear margin, which is > 2mm. There were nine patients (11.7%) diagnosed with ipsilateral breast tumor recurrence (IBTR); patients recurred as invasive breast cancer (55.6%) and the remaining recurred as DCIS (44.4%). Among the 11.7% IBTR, 30% were from positive margin group, 17.2% from close margin group, and 3.0% from clear margin group. In univariate analysis, there was a significant difference in IBTR by comparing positive versus close and negative margins of excision (*p* = 0.040). Those who did not get re-excision in positive and close margin groups, there was IBTR of three (75%) and four (25%) in the positive and close margins groups, respectively. Radiotherapy significantly decreased the risk of local recurrence only once the margin is clear. In the

close margin group, there is no significant difference in the recurrence rate whether hormonal or radiotherapy were given or not. **Conclusions:** Although there is still a controversy on the optimal margin for DCIS, this study highlighted that we are not over treating DCIS and the current recommendation of minimal 2 mm margin width should be followed in the breast conserving surgery of DCIS. Radiotherapy and hormonal therapy cannot replace obtaining clear margin of > 2 mm after breast conserving surgery in DCIS.

## Immunohistochemical Expression of Bcl-2 and Cyclin D1 in Benign Hydatidiform Moles and their Correlation with the Clinicopathological Parameters

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### ABSTRACT

**Objectives:** To assess the immunohistochemical expression of Bcl-2 and cyclin D1 in hydatidiform moles (HMs) and normal trophoblastic tissue. In addition, we aimed to find the association of Bcl-2 and Cyclin D1 immunexpression with patient outcome (progression of the disease to malignant GTDs or regression). **Methods:** A cross-sectional study conducted on female patients who were diagnosed with benign HMs at Sultan Qaboos University Hospital and Khoula Hospital from January 2010 to March 2020. The sample size was 240 cases (calculated sample size is 238). Normal products of conceptions are presented in 240 cases. Bcl-2 and cyclin D1 immunexpression were studied on cases of complete hydatidiform mole, partial hydatidiform mole, normal product of conceptions, and placentas. Slides are prepared using tissue microarray technique. A specific scoring system bases on the sum of the intensity and distribution score is used. A *p*-value < 0.050 was considered significant. **Results:** A total of 240 patients were enrolled in the study. Bcl-2 expression in the villous syncytiotrophoblasts is significantly reduced from normal placentas to partial HM (PHM) (*p* = 0.003), and PHM to complete HM (CHM) (*p* = 0.000). Cyclin D1 expression is reduced in the villous cytotrophoblasts and stromal cells from PHM to CHM, *p* = 0.001 and *p* = 0.015, respectively. Two cores of tissue microarray techniques can represent the target tissue in about 97% of the cases. **Conclusions:** Bcl-2 and cyclin D1 expression decreases in line with the excessive proliferation of trophoblast cells in hydatidiform mole. The change of Bcl-2 activity as ant-apoptotic protein and cyclin D1 may play a role in pathogenesis of GTD. Staining of the rest of samples will be done after getting the fund to validate the use of these stains as diagnostic

markers in HMs. Association of Bcl-2 and Cyclin D1 immunexpression with patient outcome (progression of the disease to malignant GTDs or regression) was not covered in this study because of low sample size of the progressed cases (11/238 cases).

### The Prevalence and Risk Factors of Hepatic Manifestation in Sickle Cell Patient in Oman

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#### ABSTRACT

**Objectives:** To determine the pattern of clinical manifestations and associated risk factors with liver derangement in sickle cell disease (SCD). **Methods:** This is a retrospective study conducted on all adult Omani patients above the age of 13 years diagnosed SCD with abnormal liver enzymes and presented to Sultan Qaboos University Hospital (SQUH) between February 2017 and October 2018. SPSS program using regression analysis methods were used to analyze the data. **Results:** Among 2000 patients, 399 (20.0%) patients diagnosed with SCD had abnormal liver enzymes. Among 399 patients, 50.9% were females and the mean age was 29.7 years. About 92.2% had hemoglobin SS genotype, 6.7% had S/β-thalassemia, and 1.0% had S/D-anemia. Abdominal pain (11.8%), fever (11.6%), and jaundice (10.1%) were the most common presentations. Among 399 patients, 60.2% had cholelithiasis, 45.5% had a history of exchange transfusion, 14.3% had iron overload, and 8.0% had hepatitis C infection. On imaging assessment, 32.0% had hepatomegaly, 29.0% had normal ultrasound (US) findings, 23.0% had cholelithiasis, 10.9% had fatty liver, 2.1% had cholecystitis, 1.6% had common bile duct (CBD) stone, and only 0.5% had liver cirrhosis. Ultrasound elastography was done for 17 patients, 12 of them had abnormal scan result. Magnetic resonance imaging of the liver was done for 21 patients, eight had iron deposition, three had CBD stone, and 10 had normal imaging. Few patients were observed to have liver derangement with no evidence of hemolysis, infection, iron overload, and SCD-related chronic hepatopathy is probably the only explanation. **Conclusions:** Hepatic manifestation is a common presenting feature in SCD. We found that gallbladder stones, iron overload, and viral hepatitis contribute significantly to abnormal liver functions. SCD hepatopathy was seen equally in both

genders with a minor contribution to abnormal liver functions in SCD.

### The Effect of Ivacaftor on Adult Cystic Fibrosis Patients at Royal Hospital in Oman

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#### ABSTRACT

**Objectives:** To evaluate the effectiveness of ivacaftor in adult cystic fibrosis patients with specific gated mutations by evaluating the outcome of certain parameters before starting the drug and compare it a year later. In addition, to obtain the local data in Oman. **Methods:** This study was institutional, single-centre conducted at Royal Hospital (because drug is available in Royal Hospital only). Retrospective record review and prospective assessments were conducted on cases aged ≥ 12 years old in 2017-2018. All patients with specific gated mutation are eligible for the study. The assessments were performed at baseline (1 year before) and 12 months after initiation of treatment in the same group of patients (they act as their own control by comparing pre- and post- treatment). The primary outcome was spirometry (force expiratory volume 1% (FEV1%)). Sub-studies were force vital capacity (FVC) %, body mass index (BMI), and the number of hospital admissions due to infective exacerbation. **Results:** A total of 15 patients were included in the study, 14 have homogenous (P.ser 549 Arg Del) and one had heterogonous (P.ser 549 Arg & P.phe 508 Del) mutations at chromosome 7. All of them had bronchiectasis changes, twelve patients had pancreatic insufficiency and one had diabetes. Mean FEV1% improved from 54.27±25.46 to 59.27±25.25 ( $p = 0.007$ ), mean FVC% improved from 63.60±20.02 to 66.93±19.72 ( $p = 0.052$ ), and mean BMI improved from 16.20±3.21 to 17.87±3.34 ( $p = 0.001$ ). Median number of hospitalization decreased from one admission to zero admission ( $p = 0.001$ ) following ivacaftor. The positive sputum cultures with pseudomonas decreased from 78.6% to 70.1%. Although this drug appeared safe in most of patient, two patients developed liver enzyme derangement. **Conclusions:** We found in our cohort with cystic fibrosis with gated mutation that almost all of them improved regardless of the severity or complication of the disease. All parameters were statically significant, which includes improvement in spirometry parameters, BMI, and number of hospitalisation. The drug appeared safe as only two patients developed liver enzymes derangement without the need to stop the drug.

## Histopathological Results and Outcome of Maternal Complications in Women Who Underwent Postpartum Evacuation at Tertiary Centre, Oman

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### ABSTRACT

**Objectives:** To confirm the proportion of retained product of conception (RPOC) by histopathological results in postpartum women who underwent evacuation. In addition, to correlate the ultrasound findings with the histopathology results of RPOC in women who underwent postpartum evacuation and to assess maternal complications resulting from postpartum evacuation. **Methods:** A retrospective cross-sectional study was conducted on all women who delivered and had postpartum evacuation at Sultan Qaboos University Hospital over 11 years period (from May 2009 to May 2020). The data was retrieved from the hospital electronic patient records. **Results:** A total of 151 patients were included in this study. The diagnosis of RPOC was confirmed in histopathological reports of 64 (42.4%) patients (group 1). In 87 (57.6%) patients, the histopathological report was negative for gestational tissue (group 2). Among patient's characteristic, there was no significant different between both groups. Parameters of clinical presentation such as fever and abdominal pain were significantly different between the groups with  $p = 0.026$  and  $p = 0.028$ , respectively. However vaginal bleeding was not significantly different between the two groups. The ultrasound (US) had detected RPOC in 89.4% (135/151) of the patients whereas the histopathology has confirmed the presence of RPOC in 42.4% (64/151) of the patients. This difference was statistically significant (Mc Numar test,  $p = 0.0001$ ). The sensitivity of US compared to histopathology report in diagnosis RPOC was 98.44% (95% CI: 91.60% to 99.96%) and specificity was 17.24% (95% CI: 9.98% to 26.84%). The overall diagnostic accuracy of the US in detecting RPOC was 51.7%. For surgical outcome, two (1.3%) patients had hysterectomy. In 20 (13.2%) patients, the histopathology showed smooth muscle. In 17 (11.3%) patients, bleeding occur during surgery (estimated blood loss > 500ml). **Conclusions:** Diagnosis of post-partum RPOC is challenging. Our results stresses the complexity of diagnosing RPOC. Proper training of doctors in diagnosing RPOC using trans-vaginal scan is of utmost importance. Further multicenter studies with larger sample size is recommended to confirm our results.

## Is Parental Consanguinity Associated with Reduced Ovarian Reserve?

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### ABSTRACT

**Objectives:** To determine whether female offspring fertility ovarian reserve is affected by parenteral consanguineous marriage. **Methods:** This is a case control study of 310 women aged  $\leq 39$  years old treated for infertility at Sultan Qaboos University Hospital and Royal Hospital, Muscat, Oman from January 2019 to August 2020 ,women were categorised into two groups control group with normal ovarian reserve with 245 women and case group of low ovarian reserve of 65 women . All included subjects were interviewed and underwent complete medical history review including the age, medical history, surgical history, family history, evaluation of the possible presence of parental consanguinity, and consanguinity among the infertile couples. Women underwent a complete physical examination and determination of serum concentration of follicle-stimulating hormone (FSH), luteinizing hormone( LH ), estradiol, prolactin, thyroid stimulating hormone, and anti-Müllerian hormone (AMH). Transvaginal ultrasound on day two of the cycle was done to obtain the antral follicle count (AFC). **Results:** A total of 310 women met the inclusion criteria, 245 women with normal ovarian reserve and 65 women with low ovarian reserve .From the total sample size, 37.7% of couples had consanguineous marriages and history of consanguinity in parents was found in 40.2%. Most of those the marriages were first degree cousins (65.9%). Primary infertility was found in 55.7% and secondary infertility in 44.3%. There was no significant difference in age (mean 31.1 vs. 32.1 years), body mass index (29.9 vs. 26.8 kg/m<sup>2</sup>), years of infertility 6.2 versus 6.7 between group of normal ovarian reserve and group of low ovarian reserve .History of parental consanguinity was positive in 23.0% of women with low AFC compared to 77.0 % in normal AFC group . About 15.0% of women with low AMH had history of consanguineous parents in comparison to 20.2% of non-consanguineous group. High FSH was found in 6.5% and 4.2% in consanguineous and non-consanguineous groups, respectively. **Conclusions:** There was no association between reduced ovarian reserve and history of parenteral consanguinity in couples studied.

## Comparison of the Fertility Effect (Pregnancy Rate) of Clomiphene Citrate and Letrozole in Non-polycystic Ovarian Syndrome Infertile Women

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### ABSTRACT

**Background:** Infertility is defined as the failure of a couple to conceive after at least 12 months of unprotected sexual intercourse. More than fifty million couples worldwide suffer from infertility every year. Unexplained infertility is designated if there is no categorical cause of infertility identified after complete assessment. 10-30% of infertile couples experience unexplained infertility, no uniform management protocol has been yet proposed which renders the therapy plan empiric. Empirical ovarian stimulation enhance fertility by increasing the number of oocytes suitable for fertilization, as well as the possibility of enhancing implantation through hormonal effects on the endometrium, most commonly used medication are Clomifine citrate and letrozole. **Objectives:** The aim of the study is to compare the fertility effect of clomiphene with letrozole in non- (PCOS) women and study the effects of both drugs on endometrial thickness. In addition, we aimed to assess the number of mature follicle in both groups and to estimate the incidence of ovarian hyperstimulation and compare between incidence of multiple gestation, rate of miscarriage, and ectopic pregnancy. **Methods:** This is a retrospective cohort study conducted among women attending infertility clinic at Sultan Qaboos University Hospital, Oman from January 2014 to December 2018 or until the sample size is reached. All patients with diagnosis other than PCOS, aged between 19-40 years, had at least one open fallopian tube on hysterosalpingogram (HSG), and with normal/near normal male factor were included. Women with PCOS, Hypothalamic hypogonadism, and who had a history of previous assisted reproductive technology treatment were excluded from the study. **Results:** One hundred eighty-seven Omani women participated in this study. Participants were divided into two groups, group one :involve 94 women who received letrozole and group two involve 93 who received clomid. A total of 305 cycles of ovulation induction were divided into 158 cycle letrozole group and 147 cycle in the clomid group. The average age of women ranged between 34-35 years, the average of body mass index was 29, which indicates great similarities in characteristics of both groups. The mean of endometrial thickness in letrozole group was 7.5 mm compared to 8.2 mm in clomid group ( $p = 0.402$ ). The number of mature

follicles in each ovary for the letrozole group was 1.7 cm compared to 2.04 cm in clomid group. The largest follicle size in women of both groups was 18 mm. The pregnancy rate in clomid group was 10.7% compared to 5.6% in letrozole group ( $p = 0.089$ ). Four patients in the clomid group conceived and aborted compared to one patient in the letrozole group ( $p = 0.477$ ). Multiple gestation were found in three patients in the clomid group, while no multiple gestation in the letrozole group was found ( $p = 0.219$ ). **Conclusions:** This study showed increased pregnancy rate with patient who underwent ovulation induction using clomifine citrate compared to patient who received letrozole although the miscarriage rate was higher. This study was conducted in a single centre, better results might be obtained if multicentre was included.

## Risk Factors Associated with Early Dental Implant Failure: A Retrospective Clinical Study

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### ABSTRACT

**Objectives:** To explore the association between early dental implant failure and possible risk factors including participants-related factors, implants-related factors, surgery-related factors, and postoperative symptoms-related factors in patients who underwent oral rehabilitation with dental implants. In addition, we aimed to investigate the incidence of early dental implant failure in all included risk factors. **Methods:** This retrospective clinical study evaluated all patients who underwent dental implant surgery in the Oral and Maxillofacial Surgery Department at Al Nahdha Hospital from January to December 2019. The predictor variables were classified as being participant-related, implant-related, surgery-related, and postoperative symptoms-related factors. The outcome variable was early dental implant failure. All included variables were presented descriptively with further bivariate and multivariate analyses to assess their influence on early dental implant failure. A  $p$ -value  $< 0.050$  was considered significant. **Results:** A total of 536 dental implants were placed in 183 patients, 61 were men and 122 were women, with mean age of 40 years (range 19-70). Forty-three implants failed before prosthetic loading. The early dental implant failure was significantly associated with the oral hygiene status ( $p < 0.005$ ), periodontal disease ( $p < 0.005$ ), location of the implant ( $p < 0.005$ ), implant length ( $p < 0.005$ ), timing of implant insertion ( $p < 0.005$ ), initial primary stability ( $p < 0.005$ ), and postoperative pain ( $p < 0.005$ ). Multivariate logistic regression analysis confirmed the significance of

poor oral hygiene status (odds ratio (OR) = 0.161; 95% confidence interval (CI): 0.031-0.829;  $p = 0.031$ ), long implants (OR = 0.131; 95% CI: 0.029-0.589;  $p = 0.008$ ), immediate (OR = 6.795; 95% CI: 1.990-23.150;  $p = 0.002$ ), and early implant insertion (OR = 67.274; 95% CI: 16.987-266.424;  $p = 0.00$ ). **Conclusions:** This study shows that the risk of early dental implant failure is higher in patients with poor oral hygiene status, patients with periodontal disease, placement of implants in anterior maxilla, immediate and early insertion of implants, long implants, poor initial stability, and the presence of postoperative pain. Future studies should direct their attention towards the evaluation of the same and other possible risk factors and in a prospective manner with more control on the variables.

## Prevalence of Diabetic Retinopathy among Omani Diabetics Attending Secondary Health Care Units

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### ABSTRACT

**Objectives:** To assess the prevalence and risk factors of diabetic retinopathy (DR) and sight threatening diabetic retinopathy (STDR) among Omani patients with diabetes attending secondary health care units in Muscat, and to determine the presence of diabetic retinopathy in the first eye screening of newly diagnosed diabetics. **Methods:** This is a retrospective cross-sectional study. All Omani patients with type 2 diabetes referred to Bawsher and A'Seeb polyclinics in Muscat for diabetic retinopathy screening in January 2018 were included in this study. Patients with media opacity precluding fundus view were excluded. All patients underwent a standard ophthalmic assessment by trained ophthalmologists. Data was collected from Al Shifa electronic health record system after ethical approval. Patients were divided into three groups: group 1 comprised of previously diagnosed diabetics not known to have DR, group 2 included patients with DR coming for follow-up, and group 3 consisted of patients newly diagnosed with diabetes. Sight threatening conditions (diabetic macular edema, vitreous hemorrhage, and tractional retinal detachment) were recorded. The sample size was estimated to be 616. Multivariate binary logistic regression analysis was done to determine independent predictors of DR. **Results:** A total of 616 patients were included in the study. Group 1 had 503 (81.7%) patients, group 2 had 107 (17.4%) patients, and group 3 had six (1.0%) patients. The prevalence of DR in the study sample was found to be 19.6% (95% confidence interval (CI): 16.5%-22.7%) and prevalence of STDR was found to

be 5% (95% CI: 3.3%- 6.7%). A positive correlation was found between duration of diabetes and DR, and this was statistically significant ( $r = 0.371$ ,  $p = 0.0001$ ). DR was higher in males and patients on insulin ( $p = 0.0001$ ). Patients with hypertension and nephropathy were also found to have a higher prevalence of DR but this was not statistically significant. **Conclusions:** About one-fifth of patients with diabetes had DR and 5.0% of them had STDR. DR was higher in males, in patients on insulin, and those with hypertension and nephropathy. Early control of the associated factors may help in reducing the prevalence and impact of DR. Data from this study is expected to help the policy makers in planning strategies for awareness and treatment of DR in the Omani population.

## Clinical and Demographic Profile of Pediatric Cataract among Omani Children Presenting to a Tertiary Eye Care Centre

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### ABSTRACT

**Objectives:** To describe the demographic and clinical profile in pediatric cataract in Al Nahdha Hospital, Muscat. **Methods:** A retrospective cross-sectional study of all Omani children presented to pediatric ophthalmology, outpatient department at Al Nahdha Hospital, Oman between January 2012 and December 2016. All patients < 18 years presented with any type of lens opacity were included, and traumatic causes were excluded. After ethical approval obtained, data was retrieved from hospital information system (HIS). A uniform data collection sheet was designed for each eye with cataract using EpiData application. Frequency distribution, means, medians, and test of significance were analyzed using SPSS Version 22.0. **Results:** Among 379 eyes of 239 patients, 58.6% (140 patients) had bilateral cataract, while 41.4% (99 patients) had unilateral affection. Male to female ratio was 1.4:1. Most (54.0%) patients were from Muscat (28.9%) and A'Sharqiyah (25.1%). Median age of cataract first noticed by parents was three months and median age of presentation to eye care unit was 14 months. Most of the children (92.9%) were born term compared to only (7.1%) preterm. Majority denied any family history of cataract (78.2%). Patients with positive family history significantly ( $p = 0.007$ ) presented with bilateral cataract (75%). Almost 22.2% of the patients had associated systemic diseases with neurological system affection (9.6%) being the commonest and 77.4% of patients with other systemic association had bilateral cataract. Only 35.4% of eyes had another ocular association, commonest was squint (11.1%) followed by corneal disorders (9.8%).

Idiopathic etiology was found in 64.6% of the eyes, 26.6% were hereditary, and only 1.6% had a prenatal infection etiology. Commonest cataract morphologies at presentation were 20.1%, 19.8%, 19.5% for total lens opacity, posterior lenticonus/posterior subcapsular, and nuclear cataract, respectively. Complicated and prenatal infection etiology have total cataract (46.7% and 33.3%, respectively). **Conclusions:** In Oman, a higher demographic distribution of pediatric cataract was found in Muscat and A'Sharqiyah governorates. There was a significant median delay in presentation to pediatric ophthalmology clinic by 11 months since lens opacity was first noticed by parents. This indicates the importance of education about pediatric cataract among ophthalmologists and general public to prevent irreversible blindness resulting in huge cost for government and poor socioeconomic growth of these families.

### Predictors of Intravenous Immunoglobulin Resistance and Coronary Artery Lesions in Kawasaki Disease among Children in Oman

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#### ABSTRACT

**Objectives:** To assess predictors of intravenous immunoglobulin (IVIG) resistance and coronary artery lesions (CALs) among pediatric patients with Kawasaki disease in Oman. In addition, we aimed to assess the validity of the Kobayashi score in the study population and to create a predictive score based on the local population. **Methods:** A retrospective cohort study was conducted on the pediatric patients diagnosed with Kawasaki disease and followed-up at the Royal Hospital between 2008 and 2019. Demographic, clinical, laboratory, and echocardiogram data for each patient were collected systematically at the time of presentation and at the six-week follow-up visit. Binary logistic regression was used to identify independent predictors of the two outcomes being studied (IVIG resistance and CALs). A *p*-value < 0.050 was considered significant. **Results:** A total of 124 cases were identified during the study period. The median age was 2.2 years (interquartile range = 0.9-4.0). Male to female ratio was 1.9:1. The majority of cases were from Muscat governorate (58.0%), followed by Al Batinah (15.0%), A'Dhahirah. (13%), and others (14%). No clear seasonal pattern was identified. There was a three-fold increase in annual cases over the course of the study. Thirteen (10.5%) patients had IVIG

resistance, 28 (22.6%) patients had coronary lesions on initial echocardiogram, and 19 (15.3%) had coronary lesions at six-week follow-up. After logistic regression, three independent factors were associated with IVIG resistance, which were age ≤ 15 months (odds ratio (OR) = 3.9, *p* = 0.030), C-reactive protein ≥ 120 mg/L (OR = 6.8, *p* = 0.080), and absolute neutrophil count ≥ 11.0 10<sup>3</sup>/μL (OR 3.2, *p* = 0.09). These factors were incorporated into a novel clinical predictive score that we named the 'Muscat score'. For the presence of each factor, one point was awarded (minimum score = 0, maximum score = 3). A Score ≥ 2 was 83.0% sensitive and 72.0% specific in predicting IVIG resistance (area under the curve (AUC) = 0.82, 95% confidence interval (CI): 0.72-0.93). This compared favorably to the Kobayashi score (67.0% sensitive and 75.0% specific at a score of ≥ 4, AUC = 0.75, 95% CI: 0.64-0.87). The main factor associated with the detection of CALs at six-week follow-up was the presence of a coronary artery lesion at presentation (*p* < 0.001). **Conclusions:** A novel predictive score based on local experience, the Muscat score, is simpler than the Kobayashi score, and may perform better in predicting IVIG resistance in Oman. Prospective validation is needed. Predicting the development of CALs at six-week follow-up is more challenging, with the presence of CALs at presentation being the main predictor.

### Prevalence and Covariate of Depressive Symptoms among Patients with Chronic Pain Attending Specialized Pain Clinics in Tertiary Hospitals in Muscat, Oman: A Cross-sectional Multicentre Study

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#### ABSTRACT

**Objectives:** To examine the prevalence and covariates of depressive symptoms among people with chronic pain (PwCP) attending specialized pain clinics in Muscat, Oman. **Methods:** A cross-sectional study that employed the Universal Pain Assessment Tool and the Patient Health Questionnaire-9 (PHQ-9) was conducted at Sultan Qaboos University Hospital, Royal Hospital, and Khoula Hospital between June 2019 and January 2020. Socio-demographic, clinical, and risks variable were also collected. Univariate analyses were employed to investigate the difference between individuals who scored above/below the cut-off points for depressive symptoms on various variables. A multiple regression analysis was used to detect the independent predictors for the depressive symptoms. A *p*-value < 0.050 was considered statistically significant. **Results:** Two hundred eighty-

seven participants were recruited for the study. Using PHQ-9 with a cut-off point of  $> 12$ , 75 (26.1%) patients scored above the cut-off point for depressive symptoms. A multivariate logistic regression analysis indicated that being treated for pre-existing depressive symptoms (odds ratio (OR) = 2.86,  $p = 0.044$ ), a family history of major depressive disorder (OR = 4.75,  $p = 0.019$ ), having fibromyalgia (OR = 28.29,  $p = 0.005$ ), and severe pain (OR = 4.21,  $p < 0.006$ ) were independent predictors of depressive symptoms. **Conclusions:** This study indicates that one in four PwCP presents with depressive symptoms. However, the role of culture needs to be taken into consideration when interpreting these findings and when building on this data.

### Predictors of Re-attempt Suicide among Suicide Attempters Attending Emergency Department at a Tertiary Care Hospital in Oman: A Retrospective Study

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#### ABSTRACT

**Objectives:** To estimate the rate of repetition of suicide attempt in person who had a previous history of at least one suicidal attempt, and to identify the predictors of suicide re-attempt. **Methods:** A retrospective cross-sectional study, including all patients presented with suicidal attempts to emergency department at Sultan Qaboos University Hospital between January 2015 and June 2019. Data was collected from the hospital information system using data collection sheet, which contained socio-demographic and clinical variables. Logistic regression analysis was used to explore the association between demographic and clinical variables and the increased risk of re-attempting suicide in person with past history of suicide. A  $p$ -value  $< 0.050$  was considered statistically significant. **Results:** A total of 157 patients attempted suicide and attended the emergency department during the study period. Fifty-five (35.0%) patients had a past history of suicidal attempts. Logistic analysis shows that patients who had psychiatric disease were 4.5 times (odds ratio (OR) = 4.53,  $p = 0.002$ ) more likely to re-attempt suicide than those patients without psychiatric disease. Patients who had a history of using illicit drugs were 3.26 times (OR = 3.26,  $p = 0.036$ ) more likely to re-attempt suicide than those patients reported no substance used. **Conclusions:** Individuals with a history of suicide attempt are at a higher risk of re-attempting suicide. Thirty-five percent of suicidal attempters were re-attempting suicide during the study period. Substance use and past history psychiatric disorders are further predictors of re-attempting suicide.

### Prevalence and Predictors of Depressive Symptoms among Patients with Thalassemia Attending Tertiary Care Hospital in Oman

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#### ABSTRACT

**Objectives:** To determine the prevalence of depressive symptoms in adolescent and adult patients with thalassemia attending a tertiary care hospital in Oman and to explore possible demographic, medical, and psychosocial correlates of these symptoms. **Methods:** This is a cross-sectional study included all thalassemia patients attending the hematology outpatient clinic, admitted into the hematology ward, or attending day care unit at Sultan Qaboos University Hospital. All patients were asked to complete Patient Health Questionnaire-9 (PHQ-9) and the demographics survey (including participant age, gender, medication, frequency of transfusion, presence of splenectomy, history of psychiatric disorder, marital status, education level, age at diagnosis, parental consanguinity, and occupation). The questionnaire was explained to the patients and they were asked to sign a consent form. Analysis was carried out using SPSS version 22.0 to produce frequency tables and the means. Logistic regression could not be done as there was no significant predictors found in this study. **Results:** A total of 104 patients participated in this study, with a response rate of 83.0%. Using PHQ-9 cut-off score of 10, the prevalence of depressive symptoms was 17.2%, which is consistent with the previous international studies. Majority (61.5%) of the subjects were females with mean age of 27 years. No significant predictors of depression was found in this study, this could be due to different characteristics of our population when compared with previous international studies. **Conclusions:** This study indicates that depressive symptoms are common among patients with thalassemia. There is no specific predictor for depression found among our study population. Screening for depression in patients with thalassemia is essential in order to detect and promptly treat patients suffering from depression.

### Cerebral Small Vessel Disease in Stroke Patients: A Single-centre Retrospective Study

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**ABSTRACT**

**Objectives:** To study the prevalence of cerebral small vessel disease (CSVD) on magnetic resonance imaging (MRI) in patients presents with acute ischemic stroke (AIS). In addition, we aimed to analyze the risk factors of CSVD to study the different MRI biomarkers of the CSVD. This research was continued to study the incidence of outcome of stroke due to CSVD. **Methods:** This is a retrospective observational single-centre study conducted at Sultan Qaboos University Hospital (SQUH), Muscat, Oman between April 2018 and March 2019. The study population was patients with stroke presented to SQUH emergency department between 2016 and 2018. After applying the inclusion and exclusion criteria, the final study population were 211 patients. Each patient was evaluated for the presence and type of different MRI biomarkers of CSVD-lacunae, white matter hyperintensities, microbleed, prominent Virchow-Robin spaces, and acute subcortical infarction. The findings were correlated with demographics and conventional stroke-related risk factors such as hypertension (HTN), diabetes mellitus (DM), hyperlipidemia, and ischemic heart disease (IHD). This research was continued as a cohort study to follow-up the patient during admission days to analyze the incidence of stroke outcome. **Results:** Of 211 patients, 40.8% shows CSVD as a cause of stroke categorized as Trial of Org 10172 in Acute Stroke Treatment subtype no. 3 (TOAST 3). In the remaining patients, the AIS was due to large vessels, cardioembolic, and other causes (Non-TOAST 3). Among this category of Non-TOAST 3, 58.2% had associated CSVD. HTN was the most common risk factor contribute to CSVD with 70.4%, followed by DM (65.9%), IHD (31.9%), and hyperlipidemia (32.1%). **Conclusions:** CSVD as a cause for AIS was seen in 39.1% of the patients. Risk factors like HTN, DM, smoking, and atrial fibrillation were strongly associated with CSVD. Hypertension was the most prevalent and important risk factor for stroke in general. Lacunae and prominent perivascular spaces were the commonest MRI biomarkers of CSVD in our study population. There was no statistically significant difference in the outcome of stroke due to small vessel disease (TOAST-3) versus non-small vessel disease (non-TOAST-3).

### Role of Cardiac Positron Emission Tomography Prior Coronary Revascularization in Predicting Outcome Benefit in Patients with Coronary Artery Disease

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**ABSTRACT**

**Objectives:** To measure the role of cardiac positron emission tomography (PET) to predict outcome prior to management planning in patients with coronary artery disease (CAD) based on the change in the left ventricle ejection fraction (EF) before and after the intervention. **Methods:** This is a retrospective cohort study conducted on patients with CAD who attended Sultan Qaboos University Hospital (SQUH) and underwent cardiac PET to assess myocardial viability from October 2015 to December 2019, regardless the nationality and gender of the patients. Cardiac PET was done according to SQUH protocols. According to the cardiac PET results, the cardiologists at SQUH determined the management plan of the patients to be either medical or by revascularization. Patients get multiple echocardiography to assess EF to evaluate the outcome of the management plan. The data were collected from SQUH track care and from Fuji RIS. Data collected were age, gender, PET result, type of management, EF before intervention, EF after intervention, and comorbidities. Data were collected in sheets of paper and then were transferred to Microsoft office Excel sheet. SPSS was used to analyze the data with the help of statisticians. Patients were categorized in 2 groups according to the viability of myocardium. Then, the improvement of EF was compared in both categories. **Results:** Only 59 patients had revascularization, FE before intervention, and EF after intervention. Out of 59 patients, 21 (35.6%) patients had scar in cardiac PET; 13 of them had apical segment scar and eight had scar in one segment other than apical segment. Thirty-eight (64.4%) patients had viable myocardium either hibernating or low uptake. All patients were included to test the hypothesis of the study, which is the improvement in EF after revascularization. Paired samples *t*-test was used to compare the difference in EF before and after revascularization in both categories. In scarred myocardium category, the mean of EF before revascularization was  $33.19 \pm 15.78$  and the mean of EF after revascularization was  $35.62 \pm 11.45$ . There was an increase in the mean by 7.3% and this increase in the EF after revascularization is not significant  $t = 0.996$ ,  $p = 0.331$ . In viable myocardium category, the mean of EF before revascularization was  $34.16 \pm 13.73$  and the mean of EF after revascularization was  $40.97 \pm 12.92$ . There was an increase in the mean by 19.9% and this increase in the EF after revascularization is significant  $t = 3.841$ ,  $p = 0.000$ . **Conclusions:** Fifty-nine patients who got cardiac PET CT resulted in either one segment scar or viable myocardium and proceeded to revascularization procedure included in this study. Paired sample *t* test proved that there was a significant increase in the EF mean by 19.9% in patients who had viable myocardium in cardiac PET. On the other hand, the improvement in EF was not significant in patients who had scarred myocardium. This result proved that cardiac PET CT can predict the outcome of management in CAD patients.