

**College of Medicine**  
**Degree: PhD**

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# **Effect of Vitamin E on Chemotherapy Induced Oxidative Stress and Immunoglobins in Acute Leukemia**

**Name:** Farhad Nehmatullah Hussein

**Nature of the research:** Academic

**Degree:** Ph.D

**Specialty:**

**Subspecialty:** Clinical Oncology

**Date the discussion:**

**Supervisor:** Assistant professor Dr. Khalid Nafih Mustafa

Professor Dr. Anwar Sheikha

## **Abstract**

Between November, 2004 and April 2006, 100 subjects were included in this study. Fifty were patients with acute leukemia (twenty five with acute myeloid leukemia and twenty five with acute lymphoblastic leukemia) and 50 apparently healthy, age-matched taken as controls.

For patients group, the effects of starting chemotherapy was investigated on certain parameters as oxidative stress reflected by total antioxidant status and serum albumin, myoglobin, ferritin and ceruloplasmin with immunoglobulin levels ( IgG, IgA, IgM) and also after adding vitamin E (400IU/day) as an antioxidant, after starting the cytotoxic regimen, and in comparison to controls. Results indicated that total antioxidant status, serum albumin, ceruloplasmin and ferritin were lowered ( $P < 0.001$ ) and serum myoglobin levels was increased ( $P < 0.001$ ) in both groups of leukemia patients after starting a course of chemotherapy. On adding vitamin E, total antioxidant status, serum albumin, ceruloplasmin were increased ( $P < 0.001$ ), while serum ferritin and myoglobin were decreased ( $P < 0.001$ ), in both groups of leukaemic patients. Regarding immunoglobulin levels, serum immunoglobulin levels were decreased after starting a course of chemotherapy and were raised after adding vitamin E to their therapeutic regimen. In conclusion vitamin E as an antioxidant may have a favorable effects as reflected by the raise in total antioxidant status, serum albumin and ceruloplasmin and immunoglobulin levels, and further studies needed to evaluate the effect of adding the antioxidant therapy taking in consideration, pharmacology and pharmacokinetic parameters of both antioxidant and cytotoxic agents , with the staging of leukemia and clinical and laboratories outcome of such cases.

# Molecular genetic studies of bacterial species isolated from patients with diarrhea

**Name:** Kamal Ismail Bakr

**Nature of the research:** Academic

**Degree:** Ph.D

**Specialty:**

**Subspecialty:** Microbial Genetic

**Date the discussion:** 2/7/2006

**Supervisor:** Asst. Prof. Dr. Khalid D. Ahmed

## Abstract

Out of 200 fecal specimens from patients admitted to the Erbil teaching and Maternity and Pediatrics hospitals in Erbil city who suffered from acute and persistent diarrhea, it was found that the bacterial pathogens were recovered from (79) patients, representing 39.5%. All isolates were subjected to the series of confirming tests to ensure that these isolates belong to the the Enterobacteriaceae and bacterial species identified selectively by unique feature of morphological, cultural, biochemical and serological characteristics. The enteropathogenic E.coli (EPEC) was the most common group, isolated from 33(16.5%) of the patients followed by Salmonella, Klebsiella, Enterobacter, Pantoea, Proteus, Morganella, Citrobacter, Cedecea, Providencia and Pseudomonas. These genera representing following ratios 13(6.5%), 7(3.5%), 6(3%), 4(2%), 2(1%), 2(1%), 2(1%), 2(1%), 1(0.5%) and 1(0.5%) respectively. The bacterial isolates were screened for their resistance to fourteen antibiotics, ampicillin, amoxicillin, cephalexin, chloramphenicol, ciprofloxacin, erythromycin, gentamycin, lincomycin, nalidixic acid, neomycin, rifampicin, streptomycin, tetracycline and trimethoprim and heavy metals (HgCl<sub>2</sub>, CdCl<sub>2</sub> and AgNO<sub>3</sub>). In addition their ability to utilize different sugars (glucose, galactose, lactose, maltose and arabinose). These isolates showed variation in their response for these phenotypic traits. Many characteristic features of plasmid DNA content of these tested isolates were studied, of these, The location of the antibiotics and heavy metals resistance genes are determined in the chosen bacterial isolates by the genetic transformation of the laboratory strain E.coli K12 JM83 with plasmid DNA purified from these isolates. All antibiotics except for neomycin, streptomycin and trimethoprim, and also heavy metals resistance genes and CdCl<sub>2</sub> are located on plasmid DNA, while those for lactose utilization are located on chromosomal DNA of these isolates. Moreover, mobilization ability of plasmid DNA content in bacterial isolates understudy through mating assay (conjugation) has been examined and the results showed that the plasmid DNA carried gentamycin, chloramphenicol, erythromycin, cephalexin, nalidixic acid and lincomycin resistance genes have ability to mobilize in some isolates in which the transconjugant colonies were picked up that show resistance for both genetic markers. Also conjugation assay among different bacterial isolates revealed that the isolate 88 (Salmonella) appear to be the recipient host and has the ability to accommodate plasmid DNA from other bacterial isolates through conjugation. Also amplification of plasmid DNA content (copy number) performed using 150 u,g/ml chloramphenicol and tetracycline separately in the log phase of the tested bacterial isolates. In addition, amplification by using these antibiotics in minimal media (starvation) carried out. Real amplifications observed in isolates 8Q(K.oxytoca\ ^ (Salmonella) and 91(E.coli) with chloramphenicol, 31(K.oxytoca) and 91(E.coli) with tetracycline and S2(Kcoli) in minimal media with 150 lig/ml chloramphenicol and appeared that starvation is more efficient way than chloramphenicol or tetracycline only. On the other hand, the presence of thermosensitive plasmids among the bacterial isolates investigated and the results revealed that no such plasmids exist in our bacterial isolates. Detection of transposition property among some antibiotic resistance genes and the results demonstrate that isolates 2Q(Morganella), 52(E.coli) and ^ (Salmonella) contain transposons for neomycin and streptomycin resistance. These genetic transposable elements have ability to jump from chromosome of these isolates to plasmid DNA and integrating into genes encoding antibiotic resistance as those for chloramphenicol resistance causing inactivation of these genes expression, plasmid DNA from other bacterial isolates through conjugation. In addition, the effect of increasing sugars concentrations on viability and growth rate of bacterial isolates sugars (glucose, galactose, lactose, maltose, and arabinose) had been tested and the results indicate that these sugars may acts as lysing agents, the growth rate of bacterial cultures decreased as indicated by optical density reading at 590 nm. Also, the effect of increasing sugars concentrations on viability, shape and total count of human red blood cells (RBCs) was carried out and the results appeared that the sugar concentration of 0.2%, 0.4% and 0.8% have no effect on shape and viability of RBCs, while concentrations of 1.6% causing their lysis. Finally, controlling the

bacterial growth and some phenotypic traits (resistance to antibiotics) of the bacterial isolates through estimation the viable count of bacterial colonies for the tested isolates by using various disinfectants (Hexafane and Sapton) concentrations was carried out. The results revealed that the subinhibitory concentrations including 20 and 40 u,g/ml of Hexafane, 10 ul volume (15 u.g/ml CHX - 150 ug/ml CIT) and 20 ul volume (30 ug/ml CHX = 300 H-g/ml CIT) of sapton, might increase the antibiotic resistance tolerance especially among Salmonella and Klebsiella, while these disinfectants in 40 u.l volume notably decrease the antibiotic resistance tolerance for all isolates. On the other hand Hexafane and Sapton at 80 u.l volume were lethal, in which no growth obtained for teated bacterial isolates. Sapton was more effective than Hexafane on the viability and antibiotic resistance of the bacterial isolates.

## **Chest x-ray in suspected pneumonia in Pediatrics Clinico-radiological study**

**Name:** Salwa Ahmad Al-Najjar

**Nature of the research:** Clinical

**Degree:** M.sc

**Specialty:**

**Subspecialty:** clinical radiology

**Date the discussion:**

**Supervisor:** Asst. Prof. Dr. Isam Al- Hatam

Asst. Prof. Dr. Abbas Al-Rabaty

### **Abstract**

Pediatric respiratory disease remains an important cause of morbidity and sometimes mortality in both developing and developed world. Community acquired pneumonia (CAP) refers to an infection of the lung by a variety of micro-organisms acquired outside the hospital resulting in inflammation of the lung tissue. The accurate diagnosis of pneumonia in children is a difficult clinical problem. The chest radiograph remains the diagnostic test of choice. A Prospective clinical study carried out at Raparin hospital in Erbil city, to determine the effectiveness of chest radiograph in the management of acute lower respiratory tract infection and also to determine predictive factors for the presence of focal infiltrates in these children. A sample of 356 children admitted between Decembers 2004 and June 2005 from emergency ward and inwards in Raparin hospital were collected with age range from range between below 2 months to 10 years with mean age of 19 months. 62% male and 38% female with male to female ratio 1.6:1, all children having signs and symptoms for instance, fever (87.4%), shortness of breath (99.5 %),cough (98%), tachypnea (73.5%), Wheezes (93.3% ), chest retraction (80%), crepitations (82%). All children had chest radiography which was read by the same radiologist and checked by consultant radiologist 42.4% of these chest X-rays shows focal infiltrations. The data were collected by using a questionnaire format .Validity of the questionnaire was determined through introducing it to panel .Descriptive and statistical procedures were used to analyze the data. Our results study the relationship of parameters with pneumonia and study their sensitivity, specificity, positive predictive value, negative predictive value, and their diagnostic accuracy. From all factors studied we found three parameters related to pneumonia diagnosed by chest X-ray these are, chest retraction with (sensitivity of 80%, and specificity of 88.29%), Tachypnea with sensitivity of (73.5% and specificity of 56.59%) fever with (sensitivity of 87.42% and specificity of 60.98%). All other factors are not significantly associated with pneumonia and if all clinical signs are negative, the chest radiograph findings are unlikely to be positive. The use of these factors will help the clinicians for selective ordering of chest X-ray to provide more accurate diagnosing of pneumonia and may also limit radiation exposure and expense.

# Molecular Characterization of $\beta$ -Thalassemia in Erbil Province of Iraqi Kurdistan

**Name:** Kawa Muhammed Amin Hasan

**Nature of the research:** Academic

**Degree:** Ph.D

**Specialty:**

**Subspecialty:** Clinical Hematology

**Date the discussion:** 24/10/2008

**Supervisor:** Prof. Dr. Nasir Al-Allawi

Assist. Prof. Dr. Anwar Sheikha

## Abstract

$\beta$ -thalassemia is a condition characterized by deficient or absent synthesis of  $\beta$ -globin polypeptide chain of hemoglobin. Depending on the severity of the disease there are three forms of  $\beta$ -thalassemia; the severe form is referred to as thalassemia major, the other less severe forms are thalassemia intermedia and asymptomatic carrier state which is thalassemia minor. Iraqi Kurdistan is located at the heart of the Middle East and its well known to have a major population with thalassemia. In Erbil province there are about 550 cases of transfusion dependent  $\beta$ -thalassemia major. A total of 69 unselected cases of already diagnosed  $\beta$ -thalassemia major and intermedia visiting the thalassemia centre of Erbil were recruited, they were 40 male and 29 female patients. After a detail questionnaire and review of their clinical and laboratory data, blood was taken from them, some of the blood was frozen in EDTA tube until further procedures. DNA extracted by Phenol-Chloroform extraction method, PCR-amplification done then reverse hybridization to specific oligonucleotide mutant and wild probes for 20  $\beta$ -thalassemia mutations using Vienna lab  $\beta$  globin gene kits. The molecular defects of 130 chromosomes (94.2%) were identified, while 8 chromosomes (5.8%) remained uncharacterized. A total of 13 mutations were recognized. Four main mutations IVSII.1 in 42 (30.4%) chromosomes, IVSI.1 in 29 (21%), Cd8 in 19 (13.7%) and Cd 8/9 mutation in 13 (9.4%) chromosomes constitute 74.5% of the total mutations. The other less common mutations were Cd5 in 7 (5%) chromosomes, Cd39 and IVSI.6 in 5 (3.6%) chromosomes each, while sporadic mutations were IVSI.110 in 3 (2.1%) chromosomes, Cd44 and Cd36/37 in 2 (1.4%) chromosomes each; Cd22, IVSI.5 and IVSII.745 in one (0.7%) chromosome each. Homozygous mutations were detected in 52% of our patients and  $\beta^0$  defect was the main type and was identified in 87.6% of the patients. On the other hand some of the clinical aspects were also evaluated, the median age was 9 years, 57 (83%) of the patients were diagnosed for the first time below the age of two years. Consanguinity marriage among the parents of the patient was detected in 68% of the cases. There was skeletal changes in 56 (81%) patients, while skin hyperpigmentation was noticed in 57 (83%) patients. Spleen was palpable in 49% of the cases and there was scar of splenectomy in 36%. On the other hand, there was hepatomegaly in 64% of the patients. The cardiac status was evaluated in 26 patients; 18 of them were discovered to have ECG and or ECHO findings. Growth assessment revealed that the height was below the 3<sup>rd</sup> centile in 55% of the male and 52% of the female patients, while the weight was below the 3<sup>rd</sup> centile in 35% male and 38% female patients. Serology for viral hepatitis C was positive in 64% of the patients, while HBsAg was negative in all of them. Iron chelation therapy was given improperly in 63% of the patients, in 32% of patients chelation therapy was adequate, while no chelation was given in 5% of them. In conclusion, it appears from the results of this study that the pattern of  $\beta$ -thalassemic mutations detected in Erbil, are more or less similar to those seen in Dohuk province and neighbouring Iran, with few exceptions, which is consistent with the history of the region. Moreover, the limited numbers of mutations detected, makes initiating a prenatal diagnostic program feasible and cost-effective. The study further shows that the management of our patients is in most instances inadequate and requires careful scrutiny, and further stresses the need to initiate a preventive program as soon as possible.

# Prognostic Value of Left Ventricular Diastolic Function in acute myocardial infarction

**Name:** Mothafar A. Habib Barzani

**Nature of the research:** Academic

**Degree:** Ph.D

**Specialty:**

**Subspecialty:** Clinical Cardiology

**Date the discussion:** 10/12/2008

**Supervisor:** Prof. Dr. Hamid K. Al Janabi

## Abstract

**Objectives:** The goal of this study was to assess the impact of left ventricular diastolic filling on remodeling and survival after acute myocardial infarction.

**Background:** Left ventricular diastolic dysfunction contributes to signs and symptoms of clinical heart failure and may be related to prognosis in heart diseases. Left ventricular diastolic dysfunction is reported to be present in acute myocardial infarction; however, little is known about the time course of changes in left ventricular diastolic function and its relation to prognosis after acute myocardial infarction.

**Patients and Methods:** Two-dimensional and Doppler echocardiographic examinations were performed in 76 consecutive patients with first acute myocardial infarction. Doppler mitral profile, end diastolic volume index, end systolic volume index and ejection fraction were assessed serially within first day, 3 months and 6 months after arrival to the coronary care unit. On the basis of early mitral deceleration time, patients with acute myocardial infarction were stratified at baseline to two left ventricular diastolic filling patterns: restrictive (Deceleration time  $<140$  ms) and nonrestrictive (Deceleration time  $\geq 140$ ). Furthermore, patients in the restrictive group during follow-up were sub classified into those with persistent restrictive and those with reversible restrictive subgroups; and patients with nonrestrictive filling subdivided on the bases of mitral and pulmonary venous flow into normal, impaired relaxation, and pseudonormal. Patients with myocardial infarction were observed for development of congestive heart failure (Killip class  $\geq 2$ ) during hospitalization, for development of left ventricular dilation, and for death during 6 months follow-up, and these complications were related to left ventricular diastolic function.

**Results:** Restrictive group patients had greater baseline end diastolic volume index and end systolic volume index ( $p < 0.01$ ) and lower ejection fraction ( $p < 0.01$ ) than nonrestrictive group, and six-month greater enlargement of end systolic volume index ( $p < 0.05$ ) and more impairment of ejection fraction ( $p < 0.05$ ). Among the restrictive group, patients with persistent restrictive filling showed six-month greater left ventricular enlargement (End diastolic volume index: ( $p < 0.01$ ) for End diastolic volume index and End systolic volume index:  $p < 0.05$  for End systolic volume index) and greater ejection fraction impairment ( $p < 0.01$ ) than those with reversible restrictive filling. Restrictive LV diastolic dysfunction was present in the very early phase of acute myocardial infarction in 32% of patients, impaired relaxation diastolic dysfunction in 43% and pseudonormal filling dynamics in 11% of the patients; whereas 14% had normal left ventricular filling characteristics. Impaired relaxation of the left ventricle was most pronounced and found in 59% after 6 months follow-up. In-hospital heart failure (Killip class  $\geq 2$ ) was found in 46% of patients with initially restrictive filling dynamics versus 19% of patients with nonrestrictive filling pattern ( $p < 0.05$ ); among patients with nonrestrictive filling; 27% of the patients with initial impaired left ventricular relaxation and 37% of the patients with initially pseudonormal left ventricular filling, demonstrated features of heart failure during initial hospitalization, whereas patients with normal left ventricular filling were free of heart failure. Severe left ventricular dilation was found in 65% of patients with restrictive left ventricular filling and in 30% of patients with nonrestrictive filling pattern during 6 months follow-up ( $p < 0.05$ ); among patients with nonrestrictive filling dynamics, severe left ventricular dilation observed in 42% of patients with initial impaired relaxation, in 17% of patients with pseudonormal, however no patients with normal left ventricular filling pattern developed severe left ventricular dilation during six-month follow-up. Six-month survival was 90% in nonrestrictive patients versus 71% in the restrictive group ( $p < 0.05$ ). Cardiac death was observed in 7 (29%) patients with initial restrictive left ventricular filling versus 5 (10%) patients with nonrestrictive left ventricular filling ( $p < 0.05$ ); among nonrestrictive group, 2 (25%) of patients with pseudonormal left ventricular filling pattern, 2 (6%) of patients with impaired relaxation filling pattern and 1 (9%) of patients with normal filling pattern died during 6 months follow-up.

**Conclusion:** Baseline restrictive filling that persists, identify compromised patients at higher risk for six-month remodeling. Heart failure and severe left ventricular dilation is more prevalent in patients with restrictive filling pattern. Furthermore Patients with restrictive filling after acute MI are at higher risk for six-month mortality.

# **Estimation and evaluation of some biophysical parameters in $\beta$ -thalassaemia patients in Erbil city**

**Name:** Dhahir Tahir Ahmad

**Nature of the search:** Academic

**Degree:** Ph.D

**Specialty:**

**Subspecialty:** Biophysics

**Date the discussion:** 5/10/2009

**Supervisor:** Assist. Prof. Dr. Amir D. Al Dabbagh

Assist. Prof. Dr. Name:Hisham Muhamad Ali

## **Abstract**

Thalassaemia is an inherited hematological disease caused by decrease or absence of production of  $\alpha$  or  $\beta$ -globin chains of hemoglobin and characterized by many changes in red blood cell morphology, plasma constituents and clinical sequels. Viscosity is a properties of a fluid related to the internal frictional of adjacent fluid layer against laminar flow, as well as the friction of the fluid generated between molecules and layers a tendency resistance to flow. Blood in this respect is regarded as a non Newtonian fluid. For estimation and evaluation of some biophysical parameters in thalassaemia patients in Erbil city, a total of (214) subjects participated in the this study,(147) patients were with thalassaemia major,(25) thalassaemic minor , who were attending thalassaemia center in Erbil city. The control group included (42) apparently healthy subjects, the study started in 3rd of January 2008. The results of this study, showed that there was a significance differences between thalassaemia major patients and control group regarding : weight, height, saturated pressure of oxygen, HCT, plasma viscosity, blood viscosity, blood conductivity, C-reactive protein red blood cell charge, WBC, Hb concentration, ESRs, blood density, kinematical viscosity and relative viscosity. While in thalassaemia minor patients, there were significant differences from normal control group, regarding the following parameters: plasma viscosity, blood conductivity, C-reactive protein, red blood cell charge, white blood cell count, saturated pressure of oxygen and kinematical viscosity. The present study, also showed that blood viscosity changes exponentially with changing in temperature, so that the viscosity decreases when temperature increases and vice versa in all three study groups. Moreover, this study showed a strong positive relationship between blood viscosity and hemoglobin concentration, white blood cell counts, red blood cell counts, hematocrit, platelet counts. However, this positive relationship was stronger between plasma viscosity and white blood cell count, blood density, white blood cell count, and C-reactive protein in thalassaemia major patients. While, the relative between zeta potential, red blood cell charge, relative viscosity, blood conductivity, and kinematical viscosity were inversely related to blood viscosity. Last study was not investigated by any researcher.

# **A study of some antileishmanial agents and immunological parameters of Iraq strains of leishmania Donovanii**

**Name:** Hawre Mustafa Bakir

**Nature of the research:** Academic

**Degree:** Ph.D

**Specialty:**

**Subspecialty:** Parasitology

**Date the discussion:** 20/5/2009

**Supervisor:** Prof. Dr. Tariq Salman Al-Hadithi

Assist. Prof. Dr. Hussein Fadil Hassan

## **Abstract**

Leishmaniasis remains a major health problem of the tropical and subtropical world. The visceral form causes most of the fatalities if left untreated. The current study was undertaken to evaluate the effectiveness of some antileishmanial agents both in vitro and in vivo against *Leishmania donovani* and to assess some immunological parameters during infection and post-treatment. The inhibitory concentration (IC<sub>50</sub>) of each antileishmanial agent in culture media and peritoneal derived macrophages was calculated. The proportion of parasite burden was calculated in treated hamsters in comparison with positive control. The results showed that liposomal amphotericin B and miltefosine have high leishmanicidal effectiveness against promastigotes and intracellular amastigotes in comparison to pentostam. Liposomal amphotericin B and pentostam produced the highest reduction in protein contents and amounts of nucleic acid respectively, in treated promastigotes in comparison to other antileishmanial agents. Formycin B had the highest inhibitory effects on acid phosphatase and 5-nucleotidase activity, while miltefosine showed the highest inhibition of adenosine triphosphatase activity. Miltefosine and liposomal amphotericin B, at high concentrations, produced highly significant reduction in serum liver enzymes levels in infected hamsters. White blood cell count was significantly increased at higher concentrations of both miltefosine and liposomal amphotericin B. Miltefosine and liposomal amphotericin B significantly decreased liver and spleen weight at high concentrations, in addition to that liposomal amphotericin B at highest concentration produced significant reduction in spleen parasite burden than other drugs. Generally, the study revealed positive relations between the concentrations of all drugs and the percentages of spleen parasite suppression. All treated hamster groups showed reduction in antibody titer by direct agglutination test. Delayed type hypersensitivity test was negative in all experimentally infected animals with visceral leishmaniasis. It can be concluded that liposomal amphotericin B and miltefosine are superior to antimonials in treating visceral leishmaniasis as they showed higher antileishmanial activity than antimonials in vitro and in vivo.

## Mild Renal pelvicalyceal system dilatation observed by ultrasound as sign of acute appendicitis

**Name:** Suhael Mawlood Esmael

**Nature of the research:** Academic

**Degree:** Ph.D

**Specialty:**

**Subspecialty:** Radiological anatomy

**Date the discussion:** 8/8/2009

**Supervisor:** Prof. Dr. Mohamed Al-ashaiker

Assist. Prof. Dr. Talib Jawad Kazim

### Abstract

Mild renal Pelvicalyceal dilatation (PCSD) observed by Ultrasound (US) used as a sign of acute appendicitis

**Background:** Acute abdomen is the situation in which the life is possibly or definitely threatened, the symptoms duration is less than (8) days. In equivocal cases the time may make up the physician's mind for correct diagnosis. Not all the cases of acute abdomen will be diagnosed in the first visit and investigations have key role in the diagnosis. Acute appendicitis (AA) is the most common cause of acute abdomen. There are meticulous and interlaced cases of acute appendicitis especially with genitourinary tracts disorders, and mainly right renal changes. Investigations and especially imaging assistance help to draw, clarify anatomical arrangements, and pathological changes observed in the abdomen. Accordingly, this study performed to solve conspicuous puzzling states of pelvicalyceal system dilatations observed by ultrasound in clinically acute appendicitis patients. And dyspeptic persons received as a control group.

**Objective:** Ultrasounds were used as an imaging aid, for the diagnosis of renal pelvicalyceal dilatation, which were seen in clinically acute appendicitis. In addition to find urinary changes, frequency, conditions, relation between those acute appendicitis patients and (PCSD). Moreover, to the other abdomino-pelvic organs ultrasound study that may cause (PCSD).

**Patients and methods:** In this study (326) patients of acute abdomen who had suspected clinically having acute appendicitis investigated in addition to (260) cases of functional dyspepsia as a control group. Study includes physical examination, laboratory investigations mainly white blood cell counts, hemoglobin, general urine examination, had been done pre-operatively. Classical appendicectomies were performed in (314) patients with (12) laparoscopic approach. Bacteriological and histopathological preparations of the excised appendix performed moreover to peri-appendicular fluid analysis.

Ultrasound imaging used as a principal agent in the research, combined in definite cases with (KUB), CT, Endoscopy- Oesophagogastroduodenoscopy (OGD) to the control group, and Doppler-Ultrasonography, Laparoscopy, and Cystoscopy were used for further evaluation and confirmation in selected cases.

Ultrasonographies were performed preoperatively and patients' further followed-up post operatively until (PCSD) resolved.

**Results:** In collection of (326) cases of acute appendicitis 110 patients (34%) found, had (RPCSD) and 23 patients (7%) had (PCSD). The pelvicalyceal dilatations were observed more (54.5%) in the acute recurrent cases or chronic appendicitis and suppurative appendicitis (30%). The recorded length of appendix arranged between 5 to 18 cm. The position of appendix were mainly pelvic or retrocecal, mostly observed in middle age groups, they had history of receiving some sorts of analgesia or inappropriate antibiotics. The peri-appendicular fluid were positively infected and showed polymicrobial.

**Conclusion:** It was found that in 34% of acute appendicitis patients had (RPCSD) and 7% bilateral (PCSD). These findings observed more in vague long durated patients, with history of recurrent previous attacks, or in the acute recurrent appendicitis (ARA) patients, moreover to aggressive pathological conditions of appendicitis. It was proved that the causes of hesitation are mainly due to hidden appendix anatomy, being mainly retrocecal, pelvic or various other rare anatomical positions. Most of the patients of clinically suspected (AA), who had renal changes, also had abnormal (GUE), but not (vice versa), not all the cases of abnormal (GUE), had (PCSD) in acute appendicitis. As a conclusion, the (PCSD) observed by (US) in the suspicious acute appendicitis patients, can be served for diagnosis of acute appendicitis in states of conspicuousness. This is done by adding (2) degrees for (RPCSD) observed by (US), to the resulted sum of (Alvarado) scores of the suspected (AA) patient. While adding (3) degrees for (BPCSD) observed by (US) to the previously calculated score.

# **Immunological and molecular characterization of heat shocked protoscoleces of *Echinococcus granulosus* in Erbil**

**Name:** Hadi Mahdi Ahmed

**Nature of the research:** Academic

**Degree:** Ph.D

**Specialty:**

**Subspecialty:** Parasitology

**Date the discussion:** 20/5/2009

**Supervisor:** Prof. Dr. Tariq Salman Al-Hadithi

Assist. Prof. Dr. Hussein Fadil Hassan

## **Abstract**

The present study was undertaken to investigate the immunological and molecular characterization of heat shocked protoscoleces of *Echinococcus granulosus*. Both crude and partially purified hydatid antigens obtained from the protoscoleces cultivated at 37°C, 42°C and 45°C for four hours in concentrations of 30 µg, 60 µg and 90 µg with and without adjuvant, were used as vaccine candidate for protection against experimental hydatid infection in Balb/ C mice. In general protection and reduction rates using crude hydatid antigens were lower than using partially purified antigens containing heat shock protein 70 with absolute protection and reduction in mice immunized with adjuvant plus 60 µg and 90 of antigen from 45°C heat treated protoscoleces. Statistical analysis showed non-significant differences in anti hydatid antibody titers among all groups of immunized mice, while lymphocyte transformation response was significantly increased in mice immunized with either crude or purified hydatid antigens from 42°C and 45°C heat treated protoscoleces. Renal and liver functions and also total leukocyte count in all immunized groups, were non-significantly affected by vaccination procedure. DNA level showed non significant variation in response to heat shock procedure, in contrast, RNA level was highly significantly increased in the 45°C heat treated protoscoleces. The activity of glutathione S transferase and lactate dehydrogenase among 37°C, 42°C and 45°C treated protoscoleces showed non-significant variation, whereas the activities of acetylcholine esterase and alkaline phosphatase were significantly decreased. Immunohistochemical localization of heat shock protein 70 using monoclonal anti-hsp70, showed prominent histochemical reactions in the tegument, hooklets region and on the surface of calcareous corpuscles. The sensitivity of indirect hemagglutination test and gel immunodiffusion in the serodiagnosis of human hydatid disease have shown to be improved with antigens from 42°C and 45°C treated protoscoleces. In conclusion purified hydatid antigens containing heat shock protein70 from 45°C treated protoscoleces with adjuvant conferred considerable protection against hydatid infection in mice.