2 Symposium on Immunology and Immune Disorders in Clinical Practice.

Sponsored by: Faculty of Medicine and Allied Sciences, King Abdulaziz University, Jeddah, Saudi Arabia

6-7 Rabī' Al-Thānī 1409 A.H.

15-16 November 1988 A.D.

Diagnosis and Management of Common Allergic Diseases, by: PROF. A.B. KAY. National Heart & Lung Institute. Dove House Street. London SW3, England.

Allergic diseases (evoked totally, or in part, by IgE-mediated mechanisms) affect many organs and tissues, but in particular the upper and lower respiratory tract, the eyes, the gastro-intestinal tract and the skin. The rapid release of mast cell-associated mediators probably accounts almost entirely for the clinical manifestations of immediate hypersensitivity, *i.e.* rhinorrhoea, nasal blockage, sneezing, wheeze, pruritus, abdominal discomfort and diarrhoea. After a single exposure to allergen, these symptoms are self-limiting and usually subside spontaneously. With repeated exposure, a prominent local inflammatory response develops. This is associated with more prolonged and protracted symptoms such as bronchial irritability or hyper-responsiveness, permanent nasal congestion, indurated skin lesions and chronic mucoid diarrhoea. It should be borne in mind that mucus hypersecretion is a characteristic feature of inflammation at all mucosal surfaces.

Current thinking suggests that early-phase, or immediate reactions are largely the result of the release of mediators such as histamine, PGD, LTC₄/D₄ and PAF. The principal mediator cell (MC) appears to be mast cell (although other IgE receptor-bearing cells, such as the macrophage, eosinophil and platelet, might also be

involved in this immediate response.) The stimulus for mediator cell activation may be either immunologic (IgE-dependent) or non-immunologic (*i.e.* changes in osmolarity as a result of the respiratory water loss associated with exercise-induced asthma). Late-phase reactions are thought to be a consequence of infiltration with neutrophils (N), eosinophils (E), and macrophages (M). These cells are probably recruited and activated either by mast cell-associated chemotactic factors [such as LTB₄, PAF, the eosinophil chemotactic factor of anaphylaxis (ECF-A) or high molecular weight neutrophil chemotactic activity (NCA {HMW})] and/or "lymphokines" derived from CD4+ T helper cells which have been stimulated by antigen processed by the antigen processing cells (APC). These mononuclear cell interactions are under the control of regulatory T cells [T suppressor [CD8+] cells] and it is speculated that the availability of these subsets may determine the magnitude of the late-phase response. It is suggested that lymphokines and monokines, which selectively activate neutrophils, eosinophils and monocytes, include LIF, EAF and INF-gamma, respectively, might be involved in allergic (and possibly non-allergic) inflammatory reactions associated with the asthma process. Macrophage-derived tumor necrosis factor (TNF) also amplifies the inflammatory response by its capacity to enhance eosinophil cytotoxicity. Eosinophil-derived agents such as PAF, LTC₄, MBP and ECP might be responsible for sub-

mucosal oedema and non-specific bronchial hyperactivity which are characteristic features of late-phase reactions. T cell-derived lymphokines such as EDF (IL-5), together with GM-CSF, might lead to eosinophilopoiesis and account for the prolonged eosinophilia of ongoing chronic asthma. The T cell is prominent in the pathology of chronic asthma and possibly "chronically activated". Thus, lymphocytes, driven by as yet undetermined "antigens" (possibly viral) may perpetuate the inflammatory response in and around the bronchi. IL-5-like products from these putative activated lymphocytes might perpetuate (a) eosinophil production by the bone marrow, (b) its release into the circulation, (c) its migration into bronchial tissue, and (d) activation to release PAF, LTC₄, MBP, ... etc. Lymphokines release directly from these T helper cells might also influence bronchial pathology. The end result is epithelial cell damage, amplification of hyperreactivity, together with mucus hypersecretion and total or partial plugging of small to medium size airways. The various aspects of this broad hypothesis are currently under investigation.

Glucocorticosteroids (corticosteroids) are extremely effective as prophylactic agents in the treatment of allergy and asthma. The precise mode of action remains unknown although many properties are recognized which might account, at least in part, for their anti-inflammatory effect. These include (1) inhibition of lymphocyte proliferation and lymphokine release, (2) inhibition of macrophage activation and mediator release, (3) inhibition of eosinophil colony formation and eosinophil chemotaxis (at high concentrations), (4) inhibition of human basophil (but not mast cell mediator release), (5) decrease in the number of mast cells and eosinophils in mucus membrane after prolonged treatment as well as profound eosinopenia after systemic corticosteroids, (6) inhibition of the late-phase response to allergen challenge in rhinitis, as well as the early-phase response in asthma after prolonged treatment with inhaled corticosteroids.

Sodium cromoglycate (SCG) is traditionally regarded as a mast cell stabilizer although whether this is, in fact, its principal mode of action remains to be seen. SCG is relatively weak at inhibiting histamine from immunologically-stimulated human dispersed mast cells but has a number of non-mast cell effects. The compound inhibits activation of various inflammatory cells including macrophages, eosinophils, platelets

and neutrophils. The effects are on a wide range of activities and include upregulations of membrane receptors, granule enzyme release, chemiluminescence and cytotoxicity. SCG also inhibits the reflux-mediated component of bronchoconstriction as well as the cough reflex. Thus, SCG has a wide range of activities, as does its successor, nedocromil sodium. The precise way in which SCG and nedocromil sodium exert their anti-inflammatory effects needs to be more clearly defined as, indeed, does the exact mode of action of corticosteroids.

Selected References

1. Kay AB (ed.). *Asthma: Clinical Pharmacology and Therapeutic Progress*; Oxford: Blackwell Scientific Publications, 1986.
2. Wardlaw AJ, Moqbel R, Cromwell O, Kay AB. Platelet activating factor. A potent chemotactic and chemokinetic factor for human eosinophils. *J Clin Invest* 1986; **78**: 1701-6.
3. Gonzalez MC, Diaz P, Galleguillos F, Ancic P, Cromwell O, Kay AB. Allergen-induced recruitment of bronchoalveolar T-helper (OKT4) and T-suppressor (OKT8) cells in asthma: relative increases in OKT8 cells in single early-, as compared to late-phase responders. *Am Rev Respir Dis* 1987; **136**: 600-4.
4. Kay AB, (ed.). *Allergy and Inflammation*; London: Academic Press, 1987; 408 p.
5. Kay AB, Walsh GM, Moqbel R, MacDonald AJ, Nagakura T, Carroll MP, Richerson HB. Disodium cromoglycate inhibits activation of human inflammatory cells *in vitro*. *J Allergy Clin Immunol* 1987; **80**: 1-8.
6. Kay AB, Wardlaw AJ, Moqbel R, Buchanan DR, Cromwell O, Fitzharris P. Leucocytes and the asthma process. In: Kay AB (ed.) *Allergy and Inflammation*. London: Academic Press, 1987; Chapter 14: 203-23.
7. Wardlaw AJ, Kay AB. The role of the eosinophil in the pathogenesis of asthma. *Allergy* 1987; **42**: 321-35.
8. Buchanan DR, Cromwell O, Kay AB. Neutrophil chemotactic activity in acute severe asthma ('status asthmaticus'). *Am Rev Respir Dis* 1987; **136**: 1397-402.
9. Wardlaw AJ, Dunnette S, Gleich GJ, Collins JV, Kay AB. Eosinophils and mast cells in bronchoalveolar lavage in mild asthma: relationship to bronchial hyperreactivity. *Am Rev Respir Dis* 1988; **137**: 62-9.
10. Corrigan CJ, Hartnell A, Kay AB. T-lymphocyte activation in acute severe asthma. *Lancet* 1988; **i**: 1129-32.
11. Frew, AJ, Kay AB. The relationship between infiltrating CD4+ lymphocytes, activated eosinophils and the magnitude of the allergen-induced late

phase cutaneous reaction in man. *J Immunol* (in press).

Modulation of Lymphopoiesis in Fetal Thymic Implants Growth within the Anterior Eye Chambers, by Adrenergic Innervation, by: UPENDRA SINGH, JAMAL A. FATANI, *Department of Anatomy, College of Medicine, King Saud University, Riyadh, Kingdom of Saudi Arabia.*

The study was carried out to investigate the role of adrenergic innervation on thymic lymphopoiesis. Host animals were bilaterally sympathectomised and 13-day fetal thymic rudiments were implanted surgically within the anterior eye chambers. On one side, a piece of freshly removed sympathetic ganglion from a newly born synginate animal was placed adjacent to the thymic implant. The implants were grown for 6 weeks. The results of the study indicate that the thymic grafts grown with the ganglia are re-innervated from the ganglia and that this innervation inhibits thymic lymphopoiesis.

1. Singh U. *Immunol* 1985; 93: 222-8.

The Predictive Value of Nuclear Thyroid Scan (NTS) in Autoimmune Thyroid Diseases (ATD), by: TARIK M. AL-BAGHDADI, ASMA A. AL-DABAGH, ABDULRAHMAN MACCAWI, MOHAMAD AL-HADRAMY, ABDULRAHMAN ASHY, YASSER, S. JAMAL, *Departments of Medicine and Surgery, Faculty of Medicie and Allied Sciences, King Abdulaziz University, Jeddah, Saudi Arabia.*

Autoimmune diseases of the thyroid gland are common. Nuclear scan is a well-recognized procedure in evaluating thyroid diseases. Grave's disease and Hashimoto's thyroiditis are associated with increased serum thyroid antibodies (thyroglobulin and microsomal antibodies).

To examine the predictive diagnostic value of NTS in these illnesses, a prospective study was carried out. Patients who suffered from different thyroid diseases were referred for NTS. At the same time, further evaluation of the thyroid was carried out with thyroid function tests and serum thyroid antibodies (TA). The interpretation of NTS was done blindly without any knowledge of other test results. A total of 72 patients were assessed. Nineteen of these patients were excluded because TA were not performed, although 13 of them showed clear evidence of ATD on the NTS.

Of the remaining 53 patients, it was found that 28 patients, who were suggested to have ATD by the NTS, were found to have TA in their serum. Ten patients, who showed no evidence of ATD on the NTS, had no TA in their serum. Twelve patients showed evidence of ATD on NTS but their serum did not show TA, inspite of 2 of them showed evidence of biochemical hypothyroidism (Hashimoto's thyroiditis) and 3 of them showed thyrotoxicosis (Grave's disease). The remaining 3 of the 53 patients showed no evidence of ATD on the NTS, while their serum showed TA.

It seems that NTS has a good correlation with serum TA and it is of value in predicting ATD.

The Use of Monoclonal Antibody Enzyme Immunoassay to Assess Thrombogenicity of Vascular Prostheses, by: H.A. AL ZAHRANI, G.D. LOWE R.J. CUSCHIERI and J.G. POLLOCK., *Department of Surgery, Faculty of Medicine and Allied Sciences, King Abdulaziz University, Jeddah, Saudi Arabia, and Glasgow Royal Infirmary, Glasgow, Scotland.*

Methods to study the thrombogenicity of vascular prosthetic materials have concentrated on the platelet component of thrombosis and may be expensive and time consuming. It is now possible to assay the cross-linked fibrin degradation products in plasma using monoclonal antibody enzyme immunoassay. The Dimertest Enzyme Immunoassay has been used to compare the degree of thrombogenicity of standard knitted Dacron prosthesis (n = 10) and the gelatin impregnated Dacron prosthesis (n = 10) after infra renal aortic reconstruction. After surgery, there was a similar rise in cross-linked fibrin degradation products with both types of prostheses. Although on the third day the D-dimer level in the gelatin impregnated prosthesis was lower, there was no significant difference in D-dimer level at 6 weeks. This suggests that the potential risk of thrombogenicity in the gelatin impregnated prosthesis is similar to the standard preclotted type. Furthermore, the Dimertest Enzyme Immunoassay is a simple, inexpensive and noninvasive test which can be used as a routine diagnostic test in the follow-up of patients to detect early graft thrombosis.

Purine Nucleoside Phosphorylase (PNP) Deficiency in a Saudi Family, by: PETER TIMMS, *King Khalid National Guard Hospital, Jeddah, Saudi Arabia.*

Investigation of the biochemical basis of hypouricaemia, infection and anaemia in a 4-year old girl.

Purine nucleoside concentrations were determined by HPLC using a 5u APS Hypersil column. PNP was measured using 8 (^{14}C) deoxyguanosine as a substrate.

The proband had a haemoglobin of 6.2 g/dl, 18% reticulocytes and a direct positive Coombs'. Serum and urine ureate were undetectable. Immunoglobulin concentrations were normal, T-cells were reduced in number, and PNP activity was undetectable (control value 4992 nmol/mg Hb/hr). Red cell dGTP was 5 $\mu\text{mol/l}$ packed cells (the control was undetectable). A younger brother has a similar biochemical picture, and an elder sister, who had died of chicken pox and pneumonia, were similarly clinically affected. The three siblings in the family were all severely neurologically compromised.

A history of infection with depressed T-cells numbers (due to high concentration of deoxyguanosine) and normal B-cells is the typical pattern found in PNP deficiency. In that family, the proband had a haemolytic anaemia which occurs in 30% of PNP. This finding, in association with a severe hypouricaemia, is a useful pointer in determining the aetiology of patients with severe infection.

Current Understanding of Human Immune System, by: KIRTIKANT V. SHETH, *King Faisal Specialist Hospital and Research Centre, Riyadh, Saudi Arabia*.

The human immune system performs basically six key functions to protect human life: 1). Encounter, 2). Recognition, 3) Activation, 4) Deployment, 5) Discrimination, and (6) Regulation. These functions are carried out successfully by the interaction of T- and B-lymphocytes, macrophages, polymorphonuclear cells, immunoglobulin and complement protein molecules. The deficiency or malfunctioning of the cellular or noncellular components will result into any one of the disorders, such as persistent infection, auto-immune disorder or neoplasm. These presentations will discuss current concepts of T-cell developments, role of T3-Ti complex, function of Interleukins and clinical application of T-cell receptor gene rearrangement, the B-lymphocytes development, synthesis, regulation and secretion of immunoglobulins, the role of mac-

rophage cell in antigen processing and presentation to T- and B-lymphocytes. A brief discussion of chemical mediators of hypersensitivity reaction and role of complement protein in immunological reaction will be presented.

Patterns of Primary Immunodeficiency in Saudi Arabia, by: HARB A HARFI, *Department of Pediatrics and Medicine, King Faisal Specialist Hospital and Research Centre, Riyadh, Saudi Arabia*.

Primary immunodeficiency disorders are rather common in the Kingdom. One hundred and eight patients and their close relatives have been diagnosed at KFSH & RC between 1981-1988. It is believed that this number represents but a fraction of the total cases, most of whom die undiagnosed. Consanguinity may be a major factor in the high incidence of primary immunodeficiency. A high index of suspicion by physicians should result in early diagnosis and referral to a center where advanced methods for diagnosis and treatment in the Kingdom are available.

Di-George Syndrome, by: TAHIR S. TOONISI, HASSAN M. GHAFOURI and ADNAN A. MERDAD, *Departments of Paediatrics & Surgery, King Abdulaziz University Hospital, Jeddah, Saudi Arabia*.

Di-George Syndrome is a rare disease which consists of a complete absence of the Thymus and Parathyroids, due to an embryologic fault of the 3rd and 4th pharyngeal pouches endoderm. It is associated with Congenital Heart Diseases (Aortic Transposition, Truncus Arteriosus, Fallot Tetralogy, Total Anomalous Pulmonary Venous Drainage) and Impaired Cell-mediated Immunity. Other features include hypoplastic mandible, defective ears, shortiltrum, sm jaw, low set ears.

The purpose of this article is to: 1) present a case of a child with Di-George Syndrome, i.e. 3rd and 4th Pharyngeal Pouches Syndrome, 2) describe Di-George Syndrome, its definition, symptoms, relevant signs, investigations and to review the updated literature regarding this, and 3) discuss the treatment of Di-George Syndrome, including the new surgical approach, i.e. Thymus Transplantation.

S.L.E. in a Pair of Identical Twins, by: MOHAMMAD A. MALIK, A.R.E. ANWAR, *Department of Paediatrics and Immunology, King Abdulaziz*

University Hospital, Saudi Arabia.

Systemic lupus erythematosus (S.L.E.) is a rare condition in the paediatric age group, and more so in identical twins. We are not aware of any report about S.L.E. in identical twins in Saudi Arabia. Here, we are reporting S.L.E. in thirteen-year-old identical female twins who presented at different times. The first one (SAH B.) presented in 1985 with a clinical presentation fulfilling the A.R.A. criteria for S.L.E. diagnosis. The second one (SAM B.) presented three years later with a slightly different clinical picture, but still fulfilling H.L.A. phenotypes (A,B,C and DR). By studying the rest of the family (two parents and four siblings), neither clinical nor laboratory evidence of S.L.E. could be detected in any of the family members up to now, although all members share some of the H.L.A. types. In this report, further detailed clinical and laboratory evaluation of these patients, in addition to a literature review, will be presented and discussed.

Peripheral Blood T Cell Subset Abnormalities in Patients with Active Systemic Lupus Erythematosus by: SYED RAZIUDDIN, *Department of Immunology, King Saud University, College of Medicine, Abha, Saudi Arabia.*

Human T-cells can be divided into functionally distinct subsets, CD4+ helper/inducer and CD8+ suppressor/cytotoxic T cells. Enumeration of these T cell subsets employing specific monoclonal antibodies, OKT4 and OKT8 or other reagents is becoming a useful tool in clinical medicine. Systemic lupus erythematosus (SLE) is a multiorgan autoimmune disease of unknown etiology, characterized by disordered immune regulation. T cell subpopulations defined by monoclonal antibodies are widely investigated in rheumatic diseases, but their role at a clinical level is still lacking. In the present study, we defined immunologic T cell subset abnormalities in the peripheral blood of nine patients with active SLE. Eight of the nine patients, who had severe clinical and laboratory manifestations of active SLE, had a characteristically marked increase in CD4+ (OKT4+) helper/inducer and a decrease in CD8+ (OKT8+) suppressor/cytotoxic T cells. Using OKIa1 and OKDR monoclonal antibodies, we found that, in all nine patients with active SLE, an increased percentage of Ia+ and DR+ (HLA-DR+) T cells is present as compared to inactive SLE. The pre-

sent study also demonstrates that the class II major histocompatibility complex antigens, HLA-DR+ were selectively expressed on the majority of CD4+ helper/inducer T cell subsets of all patients with active SLE. The elevated percentage of HLA-DR+, CD4+ helper/inducer T cells in active SLE was accompanied by a highly depressed proliferative response to T cell mitogens, phytohemagglutinin and concanavalin. CD4+ helper/inducer T cells may play an important role in the pathogenesis of active SLE in humans.

Therapeutic Pheresis: The Experience at King Faisal Specialist Hospital and Research Centre, by: SALIM H. KHALIL, *King Faisal Specialist Hospital and Research Centre, Riyadh, Saudi Arabia.*

On the Blood Cell Separator "IBM 2997", 292 Therapeutic Pheresis (T. Ph.) were performed between January 1985 and January 1988, for 62 patients with 16 different indications. Forty-seven percent of the cases were patients referred from Hematology section, 37% with renal diseases, renal transplantation, or connective tissue diseases with secondary renal failure. Neurological conditions occupied 16% of the T. Ph. load in our department. The aim of this retrospective study is to establish the value and the cost of T. Ph. load in our department. The aim of this retrospective study is to establish the value and the cost of T. Ph. in these different conditions.

A minority of patients with renal transplant rejection may benefit from T. Ph. if added to immunosuppressive therapy. The exchange of Thrombotic Thrombocytopenia Purpura (TTP) patients plasma with fresh frozen plasma will lead to good clinical response and rapid hematological improvement.

The level of paraprotein will be definitely reduced with T. Ph., which in turn minimizes the complications and leads to good clinical response in the cases of hyperviscosity syndrome.

Patients with systemic lupus erythematosus "SLE" might achieve moderate improvement with T. Ph. and Prednisone, but good response could be established if Cyclophosphamide is added.

T. Ph. in Rh-isoimmunization is a new modality of management. The reduction of Anti-D titers is transient, the repetition of T. Ph. is needed, and the addition of intravenous immunoglobulins is necessary.

Food Allergy – An Update, by: MOHAMED OSMAN GAD-EL-RAB, *Immunology Division, College of Medicine, King Saud University, Riyadh, Saudi Arabia.*

The objective is to present an updated review on the scientific basis of Food-Allergic disease. This includes personal observations on the subject.

The relative complexity of the phenomena of Food intolerance, Food idiosyncrasy and food allergy in addition to the diversity of symptoms and the lack and variations in diagnosis created a lot of controversial aspects and clinical suspicion which kept seeking proof.

On the other hand, scientific research on the pathogenesis of clinical reactions to foods as well as new diagnostic procedures are constantly surfacing. The most important is the DIMSOFT Patch test.

The immunology of digestion and handling of food antigens, the predisposing factors, the clinical presentations as well as diagnostic procedures and management will be discussed.

Well controlled studies provided evidence that some diseases are due to food allergy.

In a large number of Sudanese patients with varied presentations, food-allergic disease has been shown to underlie the aetiology, although other factors were more frequent.

Local foods and habits in different communities should be given consideration.

The fasting season "Ramadan" is a good opportunity in Muslim societies that helps in the detection and control of food-allergic disease.

Normal Serum Immunoglobulin Levels in Saudi Population from Birth to Adulthood, by: M.Y. JAN, H. GHAFOURI, A. AL-FARES, A.R.E. ANWAR, *Departments of Paediatrics, Medicine and Microbiology, Faculty of Medicine and Allied Sciences, King Abdulaziz University, Jeddah, Saudi Arabia.*

Using the single radial immunodiffusion, the serum levels of the three major immunoglobulins (IgG, IgA and IgM) were determined in normal Saudi citizens living in the city of Jeddah. The age groups studied varied from newborns, *i.e.* cord samples, up to adults. For IgG, in all age groups, a total number of 1087 samples were studied. The mean IgC level detected in the newborn group, *i.e.* cord, was 14.2 g/l with a range of

8.6-23.5 g/l. The lowest mean IgG level was detected in infants at the age group between 25-52 weeks, when it was 4.3 g/l (the range being between 2.3-8.1 g/l). The mean adult IgC level detected was 15.7 g/l with a range being 11.4-21.7 g/l.

One thousand thirty-three serum samples from all age groups were tested for the estimation of the IgA levels, resulting in a mean adult value of 2.13 g/l with a range being 0.76-3.69 g/l.

For the estimation of normal levels of serum IgM, a total number of 1077 serum samples from all age groups were tested. The mean adult level obtained for IgM was 1.45 g/l (with a range of 0.6-3.47 g/l).

No significant sex differences were detected between males and females in any of the three immunoglobulins studied in the various age groups; therefore, in each age group, the results represent the summation of the results obtained from both males and females.

A Role for Muscle in the Immune System, by: M. SALLEH M. ARDAWI, *Department of Clinical Biochemistry and King Abdulaziz University Hospital, Faculty of Medicine and Allied Sciences, King Abdulaziz University, Jeddah, Saudi Arabia.*

Glutamine is an amino acid which is used by the kidney to combat acidosis, by cells of the small intestine and particularly by cells of the immune system, namely lymphocytes and macrophages. Recent work by the author and others has demonstrated that the rate of utilization of glutamine by these latter cells is very high, and the population of such cells in a normal non-infected animal or man would utilize a high proportion of the glutamine released by muscle. It is considered that the *high* rate of glutamine utilization is essential in these cells both for provision of the optimal conditions for synthesis of purines and pyrimidines, when required for DNA, RNA and mRNA synthesis, and for provision of energy. Hence, glutamine is an "essential" amino acid for the normal functioning of these cells in the immune response so that skeletal muscle metabolism can be viewed as part of the immune system. This view provides a simple explanation for the catabolism of skeletal muscle protein during trauma, sepsis, surgery and burns: the catabolism ensures a supply of branched chain amino acids (namely leucine, isoleucine and valine) for the formation of glutamine, the amino acid utilized at very high

rate by cells of the immune system and probably cells involved in recovery and repair.

The Regulated Rearrangement and Expression of Immunoglobulin and T Cell Receptor Molecule, by: Prof. HENRY H. WORTIS, *Department of Immunology/Pathology, Tufts University School of Medicine, Boston, MA, U.S.A.*

A critical issue for immunologists is the mechanism by which separate genetic elements are brought together to produce genes encoding molecules which can bind specific antigens. During the ontogeny of antibody producing (B) lymphocytes, there is an ordered rearrangement of these immunoglobulin genes. These rearrangements ensure both the construction of single immunoglobulin genes within an individual cell and a wide activity of antibody molecules in the organism. There is a basic similarity of function, structure, genetic organization and development of immunoglobulin (Ig) and T cell antigen-receptor (TCR) molecules. However, there are unique features of T cell ontogeny and TCR molecules that explain some of the functional differences between T cells and B cells.

Human Immunodeficiency Virus (HIV) Infections: Review of Modern Concepts, by BAHAA EL DIN A. FATEHA, *King Fahd Armed Forces Hospital, Jeddah, Saudi Arabia.*

This presentation reviews the most recent advances in the epidemiology of Acquired Immunodeficiency Syndrome (AIDS). The first five cases of *Pneumocystis carinii* pneumonia in young adult males were reported in 1981*. Since then, over 100,000 cases of AIDS had been reported worldwide by April 1988. Millions more are believed to harbour this potentially lethal virus. Emphasis is on the newly revised "Case Definition for AIDS" established by Centers for Disease Control in Atlanta, Georgia, U.S.A. and its utilization in diagnosis of new cases. The molecular biology of HIV and its relevance to existing and potential therapeutic measures is examined. Selection of cases for treatment, follow-up, and adverse reactions to available medications are discussed with particular reference to Zidovudine (Retrovir). Finally, recommendations aimed at preventing the transmission of

HIV from patients to health care workers are presented.

Aids Nephropathy, by: ESSAM A. AL-SABBAN, MOHAMMED AKHTAR, *King Faisal Specialist Hospital and Research Centre, Riyadh, Saudi Arabia.*

Glomerular and tubular disorders in patients with AIDS are not uncommon findings. AIDS patient may develop mild or nephrotic range proteinuria, hematuria, electrolyte disturbances, acute renal insufficiency, or progress to end-stage renal disease. Pathologic evaluation has shown the association of focal segmental glomerulosclerosis lesions in some of these unfortunate adult patients. On the other hand, the presence of such pathologic changes in infants with AIDS makes this association unequivocally true. In this paper, the authors will review the present literature on this subject to shed light on the possible pathophysiologic mechanisms of these renal-associated disorders in AIDS patients.

The Aetiological Roles of HTLV-I and Chromosomal Abnormalities in Leukaemias/Lymphomas in the Western Region of Saudi Arabia, by: OSAMA A. SHOBOKSHI, KHALIL M. SALMAN, HILMA A. MILCHALEK, SUFIAN M. EL-ASSOUDI, JAMAL Y. ZAHARANA, *King Abdulaziz University Hospital, Jeddah, Saudi Arabia.*

Leukaemias/lymphomas not only rank the highest among males, but also affect the most economically productive age group in Saudi Arabia. Very little is known about the aetiology, the classification, and, above all, the chromosomal patterns of leukaemias/lymphomas in Saudi Arabia in particular, and the Arabian Gulf in general.

In this study, monoclonal antibodies will be used to classify various leukaemias/lymphomas, both retrospectively and prospectively, and HTLV-I antibodies will be sought in leukaemias/lymphomas, other cancer and healthy control groups and cytogenetic studies for chromosomal breakages, deletion, and translocation will be performed.

A high degree of consanguinity exists in this region; Saudi Arabia, however, constitutes a heterogeneous racial entity. These factors may shed some light into the epidemiology of HTLV-

*MMWR 1981; 30: 250-2

I and its role in leukaemias/lymphomas. Any chromosomal abnormalities underlined may not only help in diagnosis and prognosis of treatment, but more importantly, a factor that may contribute to the primary prevention of leukaemia/lymphoma in our region. Lymph node biopsies were collected for cytogenetic studies, electron microscopy, histopathology, cytology, as well as peripheral blood for evidence of HTLV-I exposure.

We are currently looking into the possibility of expanding our resources, in order to obtain more lymph node biopsies for investigation.

Modern Immunological Knowledge in the Light of Qur'an and Hadith, by: SHABBIR AHMED and MOHAMMED A. AL-BBAR, *King Fahd Armed Forces Hospital, and King Fahd Medical Research Centre, King Abdulaziz University, Jeddah, Saudi Arabia.*

Modern knowledge confirms ALLĀH has guarded mankind fully, and warns "Whatever evil befalls thee is from thyself". Adherence to Islamic code can immensely improve health of Muslims as it did in the past and such education should form an integral part of State Medicare Programme, particularly in Islamic countries.

A Review of Immunology of Infection, by: Prof. HASHIM H. ERWA, *Department of Microbiology, CMMS, King Faisal University, Dammam, Saudi Arabia.*

Infection is responsible for the highest morbidity

and mortality all over the world. Hence, it is important to understand how the body can resist infection and how this ability can be enhanced for the benefit of the individual. Protection from infection in the first place can be a genetically induced state of non-permissiveness to invasion by microorganisms, e.g. viruses. It is also an immediate outcome of basic non-specific mechanisms collectively known as *innate immunity* involving mechanical, humoral and cellular factors well coordinated for that purpose.

However, evasion of these basic resistance factors by microbes often occurs resulting in disease followed by recovery or death. Recovery indicates a successful enhancement of resistance in response to microbial antigens, i.e. an acquired specific reaction against the particular infecting agent. This specific reaction is known as the *immune response* acquired after exposure to a certain agent. This immune response is discussed in some detail considering both its arms, humoral and cellular. Sometimes recovery is not complete and the patient suffers from permanent damage or dysfunction of an organ or system due to exaggerated immune reactions. These exaggerated immune reactions, or hypersensitivity, lead to damage in tissues like the heart, the joints, the kidneys and others.

Thus, the immune status of an individual in relation to an infective agent can be categorised as immunoresponsive or immunodeficient. This indicates a strong host-parasite relationship which depends on some factors which are discussed in the review.