16:00 - 17:30 S26 - Myocardial Demage and Heart Transplantation Hall G

Chairs: **O. Amir**
M. Arad

16:00 **The Clinical Presentation and Outcome of Acute Myocarditis: Are Women With Myocarditis Sicker?**

D. Admon, I. Gotsman, D. Zwas, M. Potekhin, A. Pollak, C. Lotan, A. Keren
Jerusalem

16:15 **"Athlete's Heart" in Israel: Fact or Fiction?**

I. Horowitz, L. Zeler, T.H. Perry, Y. Henkin, R. Ilia, N. Liel-Cohen, S.L. Kobal
Beer-Sheva

16:30 **Effect of Beta Blocker Therapy on One Year Mortality of Patients with Heart Failure and Preserved Systolic Function Following Hospitalization with Acute Decompensated Heart Failure.**

R. Nevzorov [1], V. Novack [1,2], Y. Henkin [1], S.L. Kobal [1], A. Jotkowitz [1], A. Porath [1]
[1] Beer-Sheva, [2] Boston

16:45 **Immune Cell Function Testing During Rejection and Infection in Heart Transplant Recipients**

T. Ben Gal [1], M. Israeli [1], V. Yaari [1], A. Valdman [1], I. Matz [1], B. Medallion [1], A. Yussim [1], A. Battler [1], B. Sredni [2], T. Klein [1]
[1] Petah Tikva, [2] Ramt Gan

17:00 **Long Term Follow up of Percutaneous Coronary Interventions in Heart Transplant Recipients**

D. Admon, I. Gotsman, B. Varshitsky, D. Zwas, M. Potekhin, D. Gilon, A. Pollak, C. Lotan, A. Keren
Jerusalem

17:15 **The HeartMate II Left Ventricular Assist Device as Bridge to Heart Transplantation – the Sheba Medical Center Experience**

Y. Kassif, B. Sheik Yousif, L. Sternik, A. Kogan, V. Koman, S. Preisman, E. Raanani, D. Freimark, Y. Har Zahav, J. Lavee
Ramat Gan

The Clinical Presentation and Outcome of Acute Myocarditis: Are Women With Myocarditis Sicker?

Dan Admon, Israel Gotsman, Donna Zwas, Marina Potekhin, Arthur Pollak, Chaim Lotan, Andre Keren

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Background: Acute myocarditis is a common disease primarily affecting the young. The diagnostic process might be challenging, due to unusual presentation of the disease and lack of specificity of the diagnostic tests. We reviewed the clinical features and early outcome of consecutive patients with confirmed diagnosis of myocarditis.

Patients and diagnostic criteria: The diagnosis was based on clinical features including chest pain, history of recent febrile disease or upper respiratory infection, dyspnea, syncope, signs of acute heart failure/shock, abnormal ECG and chest X-ray and elevated cardiac enzymes. Coronary angiogram and endomyodcardial biopsy were performed when indicated. During a 10 year period 70 patients fulfilled the diagnostic criteria and had full clinical, laboratory and echocardiographic records available for analysis. There were 51 (73%) males; the mean age was 37 (range 17-76) years.

Results: The commonest complains were chest pain in 81%, history of fever in 42%, and dyspnea in 22%. Elevated fever on admission was present in 35%. Abnormal ECG was found in 90% and ST elevation in 33% of the patients. Two patients had cardiogenic shock and required support of intra-aortic balloon pump. On echocardiogram LV function was normal or mildly decreased in 53 (75%), and moderate or severely decreased in 17 (25%) patients. Coronary angiography was performed in 24 (34%) pts in order to exclude an acute coronary event; the procedure was performed in 65% of those with reduced LV function but only in 24% of those with preserved LV function (p=0.004). Endomyocardial biopsy was also primarily performed in pts with reduced LV function (35% vs 2%, respectively, p=0.001). Additional differences between those with and without decrease in LV function are summarized in the following table.

LV Function		Females (%)	Age (years)	ST Elevation
Normal/Mild	53 (75%)	9 (17%)	32 (17-63)	21 (40%)
Reduced	17 (25%)	10 (59%)	53 (25-76)	1 (6%)
P value		0.002	0.05	0.01

Therapy was primarily supportive. One patient with eosinophylic myocarditis on biopsy received immunosuppression. Giant cell myocarditis was not diagnosed in this series. There were no in hospital mortalities.

Conclusions: Myocarditis presented as acute coronary syndrome in about one third of the patients in whom coronary angiography was essential for reaching the correct diagnosis. Patients with reduced left ventricular function tended to be older, were mostly females, had no ST elevation on ECG and more frequently underwent invasive evaluation (angiography and/or biopsy).

"Athlete's Heart" in Israel: Fact or Fiction?

Itai Horowitz [1], Lior Zeler [1], Tzvi H Perry [1], Yaakov Henkin [1,2], Ruben Ilia [1,2], Noah Liel-Cohen [1,2], Sergio L Kobal [1,2]

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Abstract: A previous study on Israeli Olympic athletes who participated in different sport disciplines has shown that the effect of sport activities in modifying the heart anatomy is at best modest. In the present study we assessed members of the 5 leading Israeli cyclist clubs as a selected sample of high endurance sport activity participants, using echocardiography to determine the upper limits of physiologic left ventricular (LV) remodeling. Forty-seven cyclists, 5 of whom rank in the top 10 list, mean age 37 ± 10 years, 43 males were included in the study. Cyclist's body surface area was 1.8 ± 0.15 m^2. The echocardiographic results are presented in the table. LV end-diastolic diameter exceeding the upper normal limit of 56mm was measured in only one participant (57mm). In 4/47 (9%) athletes interventricular septal thickness reached 12mm, but none reached more than 13mm. Mild increment of LV mass index (>102 g/m^2) was found in 5/47 (11%) of the cyclists. LV systolic and diastolic function was normal in all the cases.

Conclusions: Endurance sport activity in well-trained Israeli bicyclists has minor impact on heart structure. Modest LV dilatation is rare and concentric hypertrophy is an uncommon finding. Significant abnormal cardiac dimensions, as found in patients with cardiomyopathy, were absent.

Parameters	Mean (SD)	Range
LV end-diastolic diameter (mm)	47 ± 4	37-57
Interventricular septum (mm)	10 ± 1.1	8-12
Posterior wall (mm)	8 ± 1.2	6-10
LV mass/BSA (g/m^2)	77 ± 16	50-114
LV end diastolic volume/BSA (ml/m^2)	66 ± 7	49-80
LV ejection fraction (%)	67 ± 7	51-80

Effect of Beta Blocker Therapy on One Year Mortality of Patients with Heart Failure and Preserved Systolic Function Following Hospitalization with Acute Decompensated Heart Failure.

Roman Nevzorov [1], Victor Novack [1,2], Yaakov Henkin [3], Sergio L Kobal [3], Alan Jotkowitz [1], Avi Porath [1]

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Background: The importance of heart failure with preserved ejection fraction is increasingly recognized. There is a lack of data about effective treatment of this condition. The present study investigated the impact of beta blocker therapy for 3 months before admission on one-year survival of patients with heart failure and preserved systolic function hospitalized due to decompensated heart failure.

Methods: We performed a retrospective cohort analysis of 345 consecutive patients with heart failure with preserved systolic function older than 18 years hospitalized due to decompensated heart failure between 11/December 2001 and 06/June 2005. Two groups of patients were compared: those who received beta blockers within 3 months before the admission (BB) and those who did not (NBB). The primary outcome was one-year all cause mortality. To adjust for a potential misbalance between BB and NBB groups in baseline characteristics, a propensity score for beta blocker therapy was incorporated into the survival model.

Results: 154 patients (44.6%) of patients with heart failure with preserved systolic function received beta blockers prior to admission. Overall one year mortality rate in the BB group was 27.3% vs. 37.2% in the NBB group with borderline significance Log-rank test p=0.05. Beta blockers failed to show protective effect after adjustment for comorbidities and propensity score (hazard ratio [HR], 0.68; 95% CI 0.41-1.11).

Conclusions: In our study therapy with beta blockers did not show protective effect on one year survival in heart failure patients with preserved systolic function.

Immune Cell Function Testing During Rejection and Infection in Heart Transplant Recipients

Tuvia Ben Gal [1], Moshe Israeli [2], Victoria Yaari [1], Andrey Valdman [1], Israel Matz [1], Benjamin Medallion [3], Alexander Yussim [4], Alexander Battler [1], Benjamin Sredni [5], Tirza Klein [2]

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Introduction: The most commonly used immunosuppression monitoring strategies after heart transplantation (HTx) apply accepted target drug levels disregarding that the drug levels do not correlate: with the drug dose administered, with the individual patient's pharmacokinetics or with the proper immunosuppressive drug effect.
Aims: To examine the functional immunity, as measured by the Cylex immune assay, during rejection and infectious episodes in HTx recipients.
Methods: The functional immune response measured by the ImmuKnow assay (Cylex) was determined in 397 blood samples from 50 HTx recipients at the Rabin Medical Center between June 2007 and October 2008.
Results: The average Cylex assay in stable (who had no rejection and no infection) HTx recipients was 348±149 adenosine triphosphate (ATP) ng/ml (range 90 to 940 ATP ng/ml). There was no correlation between Cylex levels and the Calcineurin inhibitors trough levels. The Cylex level of 13 HTx patients who suffered from 21 infectious episodes was significantly lower at the time of infection as compared with the Cylex level at the stable state (147±92 vs. 324±76 ATP ng/ml, respectively, $p<0.05$). The Cylex level of 14 HTx patients who had 16 episodes of acute rejection > Grade 2 was significantly higher at the time of the rejection episode as compared with the Cylex level at the stable state (623±165 vs. 330±140 ATP ng/ml, respectively, $p<0.05$).
Conclusions: Cylex assay levels were higher in HTx recipients at the time of rejection and lower at the time of infection as compared with Cylex levels with no infection and no rejection.

Long Term Follow up of Percutaneous Coronary Interventions in Heart Transplant Recipients

Dan Admon, Israel Gotsman, Boris Varshitsky, Donna Zwas, Marina Potekhin, Dan Gilon, Arthur Pollak, Chaim Lotan, Andre Keren

Heart Institute, Hadassah University Hospital, Jerusalem, Israel

Background: Coronary allograft vasculopathy (CAV) is an accelerated type of coronary atherosclerosis which affects the majority of patients after heart transplantation ***(HTx)*** and is currently the leading cause of late mortality after HTx. Some centers attempt Percutaneous Coronary Intervention **(**PCI) as a palliative therapy for CAV. Despite immediate angiographic success, the long term clinical results of PCI in HTx patients are not clear. In this study the long term outcome of PCI in our post HTx pts was analyzed.

Methods: All HTx recipients with documented CAV on routine surveillance post transplant coronary angiography between 1990 and 2008 were included. Patients were assigned to medical therapy or PCI according to severity of angiographic findings and suitability for PCI. Baseline clinical characteristics, angiographic results and long term survival were analyzed.

Results: Eighty five HTx recipients underwent coronary angiography and 59 (69%) had angiographic evidence of CAV . The vasculopathy was first diagnosed 1-13 (mean 4.3) years after transplantation. PCI was performed in 25 (42%) of the 59 pts with CAV. Thirteen of the 25 patients(52%) underwent additional PCI procedures due to progression of the CAV found during follow up angiography. A total of 56 segments were treated by PCI with stent implantation in 22 of the segments during the primary procedure. Of the 22 stents, 12 were bare metal stents (BMS) and 10 were drug eluting stents (DES). Immediate angiographic success (>50% reduction in luminal narrowing) was achieved in 96%. Restenosis rate after one year was 58% in the non stented segments and 25% in the stented segments. There was no in-stent restenosis documented in DES during a 2 year follow up period. Repeat PCI to restenosis was associated with 100% immediate success rate. In 5 out of 11 restenosed segments that were redilated a stent (3 BMS , 2 DES) was implanted 0.8 y – 5.8 y (mean 2.6) after the initial PCI. One-year, 5-year and 10-year survival after PCI were 83%, 52% and 35% respectively. HTx patients with documented CAV who underwent PCI had a significantly better long term survival compared to HTx patients with CAV who did not have a PCI (5-year survival 96% Vs 85% and 10-year survival 79% Vs 45% , respectively , $P<0.05$)

Conclusion: Percutaneous coronary intervention after heart transplantation is feasible, safe and seems to be associated with reasonable long term success particularly with the use of DES.

The HeartMate II Left Ventricular Assist Device as Bridge to Heart Transplantation – the Sheba Medical Center Experience

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Objective: We present the largest Israeli experience with the axial flow pump Heart Mate II left ventricular assist device (LVAD) as a bridge to heart transplantation.

Patients and Methods: Five patients underwent HeartMate II LVAD implantation at the Sheba Medical Center between November 2006 and September 2008. In four patients, age range 47-63 years with ischemic cardiomyopathy (ICM) the LVAD was implanted due to post myocardial infarction cardiogenic shock with mechanical ventilation and/or IABP in three patients and deterioration of terminal heart failure on cathecholamines in one. The fifth patient, 18 years old boy weighing 37 Kg, was implanted with the LVAD due to congenital dilated cardiomyopathy (CDCM) causing terminal heart failure with non sustained SVT/VT and supra systemic pulmonary hypertension. All five patients had at least moderate right ventricular dysfunction.

Results: Three of the patients underwent successful heart transplantation four months, six months and 10 days following the LVAD implantation. One patient is still ongoing on LVAD support and one patient died 3 days after implantation due to progression of multi-organ failure secondary to preoperative cardiogenic shock. There were no neurological or infectious complications in any of the patients and no device malfunctions. There was no need for temporary mechanical right heart support in any of the patients. Three patients were discharged home while on LVAD support: two were transplanted and one – the young CDCM patient - is still ongoing with high pulmonary resistance, pending decision of listing him for heart and lungs transplantation.

Conclusions: HeartMate II LVAD is an excellent measure of stabilizing and supporting patients awaiting heart transplantation who are at imminent risk of death. The small device is easy to implant, carries minimal postoperative complications and provides patients with good quality of life while awaiting heart transplantation at home. The key to its successful use is highly dependant on its timely implantation, before multi-organ damage becomes irreversible.