09:30 - 10:00 STATE OF THE ART LECTURE		
09:30 - 10:00	Capitalization on the immune and differentiation properties of mesenchymal stem cells.	**Prof. Osama Gaber** USA

CAPITALIZING ON THE IMMUNE AND DIFFERENTIATION PROPERTIES OF MESENCHYMAL STEM CELLS.

Mesenchymal stromal cells (MSCs) are a rare heterogeneous population of multipotent cells that can be isolated from many different adult and fetal tissues. They exhibit the capacity to give rise to cells of multiple lineages and are defined by their phenotype and functional properties, such as spindle-shaped morphology, adherence to plastic, immune response modulation capacity, and multilineage differentiation potential. Accordingly, MSCs have a wide range of promising applications in the treatment of autoimmune diseases, tissue repair, and regeneration and in facilitating implantation of transplanted tissues and organs. MSCs are comprised of a heterogeneous population of undifferentiated, committed, and lineage-primed cells, with the ability to ''home'' upon engraftment.

Studies have revealed that MSCs do not express immunogenic co-stimulatory molecules, such as B7-1, B7-2, or CD40 and that donor MSCs are potent inhibitors of T-cell proliferation in mixed lymphocyte cultures, thus preventing graft-versus-host disease (GVHD). MSCs are immunoprivileged cells, due to the low expression of class II Major Histocompatibility Complex and costimulatory molecules on their cell surface, Because of their location on the luminal surface of the main sinusoidal blood vessels in the adult bone marrow, it should be expected that MSCs may transition from immunostimulatory to immunosuppressive cells, depending on the type of insult facing the marrow. One potential route by which MSCs can naturally switch immune states is based on the way they process antigens and express costimulatory molecules at the immunological synapse. This switch in antigen presentation may be related to soluble factors or cytokines secreted in the synapses by different antigenic exposure. Finally, MSCs modify the function of some cells through cell-cell interaction. This is particularly important in the manner by which MSCs regulate the function of natural killer (NK) cells. These data demonstrate that besides their capacity to home and integrate into damaged tissues, MSCs can provide immunomodulatory effects by paracrine and/or cell-cell contact that is regulated by the inflammatory microenvironment.

Mesenchymal stem cells (MSCs) also have the ability to proliferate and differentiate into insulin-producing cells. Following in vitro expansion cells are driven to expression of islet genes, insulin secretion and finally to the formation of islet-like insulin-producing aggregates (ILIPA). ILIPAs have to be protected from autoimmune and alloimmune destruction and at the same time be maintained in an environment that favors their continued growth and differentiation. In one experimental construct nanotechnology based drug delivery and three dimensional printing can be combined to constructed a prototype of a bioartificial gland that houses insulin secreting Stem cells and deliver agents that promote vascularization of the cells while maintaining an immune-protective environment that shields the cells from immune mediated destruction. Our data on this hybrid approach combining encapsulation, in situ drug delivery and nano-technology holds promise in the treatment of diabetes.

10:00 - 12:00 LIVER TRANSPLANTATION SESSION I		
10:00 - 10:15	Ex- vivo liver machine perfusion – storage assessment and repair of marginal grafts	**Prof. Markus Boehnert** Germany

EX VIVO LIVER MACHINE PERFUSION - STORAGE, ASSESSMENT AND REPAIR OF MARGINAL GRAFTS

Markus U. Boehnert
Organ Transplant Centre, King Faisal Specialist Hospital, Riyadh, Saudi Arabia

Transplantation is the only possible cure for end stage liver disease. However, organ shortage is a worldwide common problem and leads to an increased death rate of patients on waiting lists for orthotopic liver transplantation. The usage of marginal grafts, e.g. older, fatty livers or livers retrieved after donation after cardiac death is one approach to attempt this problem. Livers retrieved after cardiac death (DCD) are often declined for transplantation because of the increased risk for graft failure and bile duct injury. The current cold static preservation technique is associated with a high risk of biliary complications and does not offer the opportunity to assess graft injury and function. We compared the novel Normothermic acellular Ex Vivo Liver Perfusion (NEVLP) with conventional cold static organ preservation for livers retrieved after cardiac death.

Methods: First, pig livers were perfused for 12 hours in a cell free oxygenated perfusion solution, followed by 12hr perfusion with whole blood as a model of transplantation. ALT and histology were evaluated as parameters of the liver injury, urea synthesis, bile production and oxygen consumption were determined as marker of the liver function. In a second approach, pig livers either subjected to 1hr warm ischemia plus 12hrs cold storage in UW or 1hr warm ischemia plus 4hr cold storage plus 8hr NEVLP. After 12hr organ preservation the livers were perfused for 8hr in a pig liver transplant model.

Results: 12hr Normothermic acellular Ex Vivo Liver Perfusion followed by 12hr whole blood reperfusion was not associated with liver injury. Serum ALT (mean 27U/L) remained normal, and histology did not show any evidence of necrosis (<1%). Bile production (mean 3cc/hr), oxygen consumption (400mmHg), and BUN synthesis (1.8mmol/l) were within normal limits. In a second approach, NEVLP was compared to cold static storage in a DCD model using 1hr warm ischemia and 12hr preservation. NEVLP was associated with significantly decreased serum AST (26U/L vs 285U/L), decreased necrosis (10% vs 35%, $p<0.05$), and increased oxygen consumption (400mmHg vs 230mmHg, $p<0.05$). Cold static storage after DCD retrieval was associated with loss of peripheral arterial blood supply, while arterial blood flow was maintained in NEVLP preserved grafts. Accordingly, UW preserved grafts had massive biliary necrosis (90%), while bile ducts were normal in NEVLP preserved livers.

Conclusion: NEVLP allows prolonged organ storage with normal liver metabolism without inducing preservation injury. Bile duct injury after DCD liver retrieval develops in cold static, but not NEVLP preserved organs. NEVLP is a novel preservation technique for the assessment of marginal grafts. Ex Vivo Machine Perfusion seems to be a promising tool, which might help to exceed the donor pool. Consecutive this would help to minimize the death rate of patients on the waiting list for transplantation.

10:00 - 12:00 LIVER TRANSPLANTATION SESSION I		
10:15 - 10:30	Transplantation of hepatocellular carcinoma. Is there a tumor size?	**Prof. Osama Gaber** USA

TRANSPLANTATION FOR HEPATOCELLULAR CARCINOMA IS THERE A TUMOR SIZE LIMIT?

Ahmed Daoud, R. M Ghobrial, L Teeter, E Gravis and A.Osama Gaber
Departments of Surgery, laboratory and genomic medicine the Houston Methodist hospital and Weil Cornell medical college

The advent of tumor size based criteria (Milan and UCSF) for transplantation of Hepatocellular carcinomas (HCC) has facilitated access of tumor patients to transplantation. Recent success in transplanting patients with larger tumors (beyond UCSF) necessitates understanding of patient, tumor and biological criteria that determine successful outcome for HCC Transplantation across all size criteria.

We analyzed 11,928 patients who received OLT from 2002 till 2013from the UNOS star file. Clinical outcomes were compared by tumor size at transplant; Milan (N=11555), beyond Milan within UCSF (N=291) & beyond both Milan & UCSF (N=82). Statistical analysis was done to determine factors impacting survival.

There were no statistically significant differences in the 1, 3, and 5 year Survival {Fig} between the three patient groups (within Milan 91.1%, 74.8%, 60.3%, beyond Milan within UCSF 92.7%, 71.1%, 51.6%, beyond both Milan & UCSF 95.8%, 75.9%, and 58.1%. In multivariate analysis the hazard ratio and 95% CI of factors significantly affecting survival included, AA race (1.56; 1.37-1.78), AFP >3000 (2.41; 1.77-3.28), Hepatitis C infection (1.45; 1.30-1.62) with age, diabetes and largest tumors diameter having a more modest impact. Total tumor burden and time to transplantation were not significant predictors of survival. Multivariate analysis within Milan only patients demonstrated stability of the hazard ratios for race, hepatitis C infection, tumor diameter, age and diabetes.

Conclusions:These data indicate that based on current clinical selection criteria a small number of large tumors can be successfully treated by transplantation, and points to the need to include markers of HCC biologic behavior beyond size and tumor burden to transplant criteria.

10:00 - 12:00 LIVER TRANSPLANTATION SESSION I		
10:30 - 10:45	Liver transplant in Egypt, Past, Present & Future.	**Prof. Ibrahim Marwan** NLI - Egypt

10:00 - 12:00 LIVER TRANSPLANTATION SESSION I		
10:45 - 11:00	Milan criteria in Liver Transplantation for HCC: In a nutshell	**Prof. Tarek Ibrahim** NLI - Egypt

10:00 - 12:00 LIVER TRANSPLANTATION SESSION I		
11:00 - 11:15	Living Donor Liver Transplantation for HCC, Egyptian Experience.	**Prof. Mahmoud El Meteny** Ain Shams University

10:00 - 12:00 LIVER TRANSPLANTATION SESSION I		
11:15 - 11:30	Living Donor Liver Transplantation for HCC	**Prof. Omar Fathy** Mansoura University

10:00 - 12:00 LIVER TRANSPLANTATION SESSION I		
11:30 - 11:45	Optimum achievement of LDLT outcome, experience of 500 cases	**Prof. Refaat Kamel** Ain Shams University

10:00 - 12:00 LIVER TRANSPLANTATION SESSION I		
11:45 - 12:00	Hypercoagulation monitoring during & after Liver Transplantation	**Prof. Khaled Yassen** NLI - Egypt

COAGULATION MONITORING DURING AND AFTER LIVER TRANSPLANTATION

Prof Khaled Yassen MD FFARCSI

The incidence of intraoperative thromboembolic events is variously reported to be between 1 to 4% and there is a suggestion that this may be associated with underlying hypercoagulability.[1-3]
However, many patients with hypercoagulability may go undiagnosed until they reach the operating room (OR) or until a clinically significant thromboembolic event occurs. In other cases, clot formation may occur at any time during surgery, rendering intraoperative monitoring of coagulation and prompt treatment of hypercoagulation crucial for the prevention of thromboembolic complications [4-6]
Aim is to study the perioperative coagulation profile for live liver transplant recipients with tendency to hypercoagulability. 50 consecutive recipients with two or more tests demonstrating tendency to hyper coagulate (low Protein C, low Protein S, low Ant thrombin III, abnormal Factor V leidin mutation, increased Lupus anticoagulant, increased Homocystein IgG-IgM, increased Antiphospholipid). Rotational thromboelastometry (ROTEM) (EXTEM, INTEM and FIBTEM) and Conventional coagulation tests (CCT) (Prothrombin time (PT), activated partial thromboplastin time (a PTT), fibrinogen level, platelets count, and International normalization ratio (INR)) were monitored preoperatively, anhepatic phase, post-reperfusion, first, third and seventh postoperative days. Both CCT and ROTEM were used to guide blood transfusion. Heparin infused (60-180 U/Kg/day) postoperatively for 3 days to keep aPTT above normal reference then replaced with low molecular weight heparin (20 mg/12 h)
Results: Both EXTEM and INTEM demonstrated significant changes with phases of transplantation. MCF postoperatively after 3 days demonstrated a tendency to norm coagulates despite on heparin, with a significant steady increase in FIBTEM (MCF) parameter above normal reference, reflecting an increase in fibrinogen activity. No significant correlation was found between ROTEM and other CCT Hepatic artery thrombosis (HAT) reported in 7/43(16%), stenosis 9/ 43 (20.9%), portal vein thrombosis 3/43 (7%). Vascular events were observed mainly after one week (6/10) 60%. Blood units (RBCs 8.80$\pm$5.82, FFPs 8.62+4.07 and cryoprecipitate 12$\pm$4) with no postoperative requirements. Bile leak (19/43, 44.2%) and sepsis (9/43, 20.9%) with HAT were the most important complications. Six month survival rate is 27/43, 62.8%.
Conclusion: Postoperatively ROTEM MCF tends to norm coagulate with a CCT guided anticoagulation regime. An alternative regime guided by ROTEM should be the focus in future with an extension beyond one week to help reduce late vascular events. A significant increase in fibrinogen activity FIBTEM MCF was observed despite hypofibrinogemia. Cryoprecipitate rich in fibrinogen should be used with caution. The triad of prothrombotic state, bile leak and sepsis may

contribute to the development of vascular events, but need further multicenter studies to confirm.

References for further reading

1. Krzanicki D1, Sugavanam A, Mallett S Intraoperative hypercoagulability during liver transplantation as demonstrated by thromboelastography. Liver Transpl. 2013 Aug; 19(8):852-61.
2. Arshad F, Lisman T, Porte RJ. Hypercoagulability as a contributor to thrombotic complications in the liver transplant recipient. Liver Int. 2013 Jul;33(6):820-7.
3. Gouvêa G, Diaz R, Auler l, Toledo R, Soluri A, et al. Perioperative Coagulation Profile in Living Liver Donors as Assessed by Rotational Thromboelastometry. Liver transplant 2010; 16: 387-392.
4. Saner FH, Gieseler RK, Akız H, Canbay A, Gorlinger K. Delicate Balance of Bleeding and Thrombosis in End-Stage Liver Disease and Liver Transplantation. Digestion 2013; 88:135-44.
5. Mallett S, Chowdary P , Burroughs A. Clinical utility of viscoelastic tests of coagulation in patients with liver disease. Liver Int. 2013: 33: 961–974
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10:00 - 13:00 ANAESTHESIA AIRWAY WORKSHOP	
Prof. Ezz El-Din Fikry	Anaesthesia Department, Al Azhar University, Cairo
Prof. Mohamed El-Fiky	Al-Azhar University
Prof. El-Sayed El-Fiky	Al-Azhar University
Assistant Prof. Abdel-Azim Hegaziy	Al-Azhar University
Assistant Prof. Sameh Hassan	Al-Azhar University
Assistant Lecturer Osama Allam	Al-Azhar University
Assistant Lecturer Mohamed Gaber	Al-Azhar University
Dr. Ahmed Bedawy	Lecturer of Anaesthesia (Helwan University) represents the conference organizers of National Liver Institute, Menoufiya University


Ezz El-Din Fikry


Mohamed El-Fiky


El-Sayed El-Fiky


Abdel-Azim Hegaziy


Sameh Hassan


Osama Allam


Mohamed Gaber


Ahmed Bedawy

OPENING CEREMONY	
12:00 -12:30	▪ The speech of the president of Menoufia University. ▪ The speech of the Dean of the NLI. ▪ The speech of the President of the Conference. ▪ The speech of the Vice President of the Conference. ▪ The speech of the Head of The Liver Transplantation Unit.

13:00 - 15:00 BILIARY SESSION		
13:00 -13:15	Low cost strategies for biliary surgery	**Prof. Jame Vilaca** Portugal
13:15 - 13:30	Optimizing the management of biliary emergencies	**Prof. Ahmad Nassar** UK

13:00 - 15:00 BILIARY SESSION		
13:30 - 13:45	Management of perihilar cholangiocarcinoma	**Prof. Amr Helmy** NLI - Egypt

13:00 - 15:00 BILIARY SESSION		
13:45 - 14:00	Iatrogenic biliary injury: multidisciplinary management of tertiary referral center	**Dr. Ibrahim Abdel-Kader** NLI - Egypt

13:00 - 15:00 BILIARY SESSION		
14:00 - 14:15	Post-cholecystectomy bile duct injuries: single center experience	**Prof. Gamal El-Ebeidy** Mansoura University

POST CHOLECYSTECTOMY BILE DUCT INJURIES. A SINGLE CENTER EXPERIENCE

Iatrogenic bile duct injuries continue to occur despite increase in experience with laparoscopic cholecystectomy.
Between 1995 and 2012, 330 patients with post-cholecystectomy bile duct injuries presented to Gastroenterology Surgical Center, Mansoura University, Egypt. Of these patients, 232 were females and 98 patients were males. Their mean age was 38 years ± 12. 63% of the patients were referred from private hospitals while 34.5% were referred from primary hospitals. 252 patients had open cholecystectomies while 78 patients had laparoscopic cholecystectomies. Regarding the type of injuries according to Strasberg-Bismuth classification, the most common was type E2 injury (31.2%) followed by type A injury (20.6%). According to the time of diagnosis, 10 patients were diagnosed intra-operatively, 236 patients were diagnosed early (within one month of the cholecystectomy) and 84 patients were lately diagnosed (more than one month after the cholecystectomy). Patients presented with generalized peritonitis, localized peritonitis with fistulae or with progressive jaundice.
229 patients were managed surgically where 217 patients underwent bilio-enteric reconstruction while 122 were managed by endoscopic dilatation and stent out of which 21 patients needed surgical reconstruction after failed repeated dilatations.
87.3% of patients who were managed surgically showed excellent outcomes according to Johns Hopkins criteria compared to 78.6 % for endoscopic management.
As a conclusion, early diagnosis of iatrogenic bile duct injuries together with management by experienced hepatobiliary surgeon greatly improves the patient outcomes.

13:00 - 15:00 BILIARY SESSION		
14:15 - 14:30	Concomitant vascular injury associated with post-cholecystectomy iatrogenic bile duct injuries: Institutional Experience	**Dr. Osama Hegazy** NLI - Egypt

CONCOMITANT VASCULAR INJURIES ASSOCIATED WITH POST-CHOLECYSTECTOMY IATROGENIC BILE DUCT INJURIES! INCIDENCE AND MANAGEMENT IN A HIGH VOLUME CENTER

Aims, Concomitant vascular injury with post cholecystectomy bile duct injury is possible. It is considered as an increasing finding during repair. Thus, assessment of those injuries is crucial for defining the optimal surgical management.
Methods, One hundred and thirty patients were managed surgically for post cholecystectomy bile duct injury between January 2010 to December2014in the department of HPB surgery, National Liver Institute, Menoufiya University in Egypt. Patients records were revised including preoperative , intraoperative and postoperative data. Follow up visits were also revised. Vascular injury was identified intra-operatively at the beginning of the study while, later, all patients were carried out Computed Topographic hepatic angiography. Results, Twenty eight patients had concomitant vascular injury. Majority were females (75%)with mean age 35years (range, 30-50years). Most of the injuries were post open cholecystectomy (71%). All the patients had right hepatic artery injury while seven had added right portal vein injury. Fifteen patients had right hepatectomy and left hepatico-jejunostomy(53%). Three patients died (ll%)due to sepsis and multi-organ failure. The remaining patients had conventional hepatico-jejunostomy.
Conclusions, Assessment of vascular injury is an important part in the management of patients with bile duct injuries. Isolated arterial or combined portal injuries may lead to hepatectomy while mortality occurred due to cholangitic abscesses , severe choalngitis with subsequent sepsis.

13:00 - 15:00 BILIARY SESSION		
14:30 - 14:45	Challenging of Hepaticojejunostomy Redo	**Prof. Atef Abdel-Ghany** Banha University

14:00 - 15:00 ANAESTHESIA FREE PAPER POSTER SESSION		
Anaesthesia Chairpersons	**Prof. Mohamed Abdel-Latif** **Prof. Magdy Khalil**	(Cairo University) (NLI - Egypt)

ROTATIONAL THROMBOELASTOMETRY DURING AND AFTER ADULT LIVE LIVER TRANSPLANT RECIPIENTS. A PROSPECTIVE DIAGNOSTIC STUDY

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Introduction: Hypercoagulabilitry is common among hepatic patients and can lead to serious thromboembolic events. Aim is to assess the perioperative coagulation changes for liver transplant recipients.

Methods: A prospective diagnostic study including 43 consecutive recipients prone to hypercoagulation with 3 or more of the following: Low Protein C, low Protein S, low Anti thrombin, abnormal Factor V Leiden mutation, increased lupus anticoagulant, increased homocystein IgG-IgM, and increased antiphospholipid antibodies. South African Cochrane Registry (201405000814129). Rotational thromboelastometry (ROTEM) (EXTEM, INTEM and FIBTEM) and conventional coagulation tests (CCT) were assessed preoperative, anhepatic, post-reperfusion, and postoperative days 1, 3 and 7. ROTEM was used to guide blood transfusion. Heparin infused (60-180 U/kg/day) postoperative for 3 days then replaced with low molecular weight heparin (20 mg/12 h)

Results: A step ladder significant increase in FIBTEM (MCF) to above reference range postoperatively despite normal fibrinogen blood levels ($P<0.05$). Both EXTEM and INTEM demonstrated significant changes with phases of transplant ($P<0.05$), but with no hypercoagulation. INTEM CT (normal ref 100-240 sec) normalize on days 3 and 7 (199.58±73.55, 186.90±67.01), despite prolonged aPTT (62.53±17.91, 48.49±15.79) respectively. No significant correlation was found between ROTEM and CCT. Hepatic artery thrombosis (HAT) reported in 5/43(11.62%) and partial portal vein thrombosis in 2/43 (4.65%), mainly after critical care discharge and with high FIBTEM (MCF) in 5/7. Units transfused (RBCs 8.80±5.82, FFPs 8.62+4.07 and Cryoprecipitate 12±4) with no postoperative requirements. Transplant indications were Hepatitis C infection (83.7%), combined with carcinoma (37.2%). Recipients had a decreased Protein C, Lupus anticoagulant and Antithrombin III in 74.4%, 88.4% and 86.2%, respectively, with Factor V Leiden mutation positive in 25.6 % 3 month survival was 74.5% and 61.3% for one year survival.

Conclusion: A significant postoperative increase in FIBTEM MCF was observed among this group of recipients despite normal fibrinogen blood levels. The ability of FIBTEM to be used as a predictor for thromboembolic events need to be investigated particularly after one week on surgical wards when CCTs fails to diagnose the condition. A ROTEM guided anticoagulation regime need to be developed and investigated in future studies.

INTRAOPERATIVE EFFECT OF DEXMEDETOMIDINE INFUSION DURING LIVING DONOR LIVER TRANSPLANTATION

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Background: Dexmedetomidine hydrochloride (Dex) is a useful adjuvant for general anaesthesia. Aim is to evaluate the effects of Dex infusion during liver transplantation on the general anaesthetic requirements, haemodynamics, oxygen consumption (VO_2), CO_2 production (VCO_2) and cost

Methods: A prospective, randomized, double-blind study. After Ethics Committee (0076/2014), Pan African Clinical Trial Registry of South Africa (PACTR201408000872245) and consent approvals, 40 recipients were equally divided to receive either Dex (0.2-0.7µg/kg/hr) or placebo (Control, C). Patient State Index (PSI), SEDLine (Masimo, Irvine, CA) monitored anaesthesia depth (25-50) with Desflurane (Des) % and fentanyl altered accordingly. Transoesophageal Doppler (TED) (CardioQ, Chichester, UK), invasive mean arterial blood pressure (MABP, mmHg) and heart rate (HR, beat/min) were monitoring any Dex side effects and altering infusion rate accordingly; TED was used for fluid optimization. Metabolic gas monitoring (VO_2, VCO_2) and Des consumption (GE Health Care, Finland) were recorded.

Results: Dex reduced Des and fentanyl consumption vs. C (120.0±30.2 vs., 248.0±38.8) ml, (440.0±195.74 vs., 1300.0±32) µg, respectively ($P < 0.01$). Dex was delivered for 11.35±2.45 hr with comparable HR, MABP and TED variables vs. C and with similar mean noradrenaline support (5.63±2.44 vs. 5.83±2.57 mg, P=0.81). VO_2 was reduced with Dex vs. C during anhepatic, 30 min post-reperfusion and end of surgery (193.2±26.78 vs. 239±14.93) (172.1±28.14vs 202.7±18.03) and (199.7±26.63 vs. 283.8±14.83) $ml.min^{-1}.m^{-2}$ respectively ($P<0.01$). VCO_2 was also reduced with Dex vs. C during the same periods (195.2±46.41 vs. 216.7±29.90, P =0.09), (210.6±60.71 vs. 253.9±32.51, P= 0.01) and (158.7±49.96 vs. 209.7± 16.78, $P <0.01$), $ml.min^{-1}.m^{-2}$ respectively
Comparable operative times and graft weights with Des vs, C (11.35±2.45 vs. 12.0±2.38 hr, P=0.40), (785.0±110.14 vs. 775.0±137.66 gram, P= 0.80), respectively. Total Dex consumed 205±15.39 µg. Dex reduced the total anaesthetic cost (654.17±116.21 vs. 807.22±99.01, Egyptian pounds, LE, $P<0.01$)

Conclusions: PSI guided Dex infusion helped to reduce Desflurane and fentanyl consumption at a lower cost and with no adverse effects on haemodynamics. The observed reduction in VO_2 and VCO_2 associating Dex infusion and their clinical impact particularly on newly transplanted liver graft cells needs be further investigated in depth.

COMPARISON BETWEEN TWO STRATEGIES OF FLUID MANAGEMENT ON BLOOD LOSS AND TRANSFUSION REQUIREMENTS DURING LIVER TRANSPLANT, A RETROSPECTIVE MATCHED CASE CONTROL STUDY

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Background: Although central venous pressure (CVP) is supposed not to be used for making clinical decisions regarding fluid management[1], low CVP continues to be a recommended technique as it decreases blood loss and transfusion requirements during liver transplant (LTx)[2].
Aim: To compare the effect of low CVP and transesphageal Doppler (TED) fluid management on blood loss and blood transfusion during LTx.
Methods: Two groups of recipients :GI, control, n=46, where CVP was decreased by 40%, relative to the preoperative value in the preanhepatic phase with mean arterial pressure kept >60 mmHg by vasoconstrictors, and GII; n=45, where TED guided protocol[3] based on corrected flow time (330-360 msec.) and stroke volume (60-100ml) (SV) was followed with systemic vascular resistance kept > 750 $dyns^{-1}sec.\ m^{-5}$ by noradrenaline. Fluids given were; Ringer acetate $6ml^{-1}kg\ h^{-1}$, 6% HES 130/0.4 and albumin 5% which were manipulated according to both protocols. Coagulation defects were corrected only when there is uncontrolled surgical bleeding following thromboelastometry. Intraoperative blood loss, blood and fluids requirements, urine output (UOP), creatinine (preoperative, day1, 3, 5), and lactate (preoperative, end anhepatic, end surgery, day 1, 3) were compared.
Results: The 2 groups were comparable regarding MELD score, preoperative hemoglobin, international normalized ratio, platelet count, creatinine, and lactate. Prior the anhepatic phase, CVP was significantly lower in GI (5.8± 0.9 vs 9.3 ± 1.2; p< .001). 4 patients in GI and 11 in GII received noradrenaline. GII tended to have less but not significant blood loss (ml^3) (2327± 686 vs 2396± 680, p=0 .6), packed red blood cells units (3.6 ± 2.1 vs 3.9 ± 2.2, p=0 .5) and plasma units (3.6± 2.2 vs 4± 3, p; .5). GII received less colloid (liter) (3.3 ± .73 vs 3.8 ± 1.07, P; .01). Lactate was significantly higher in GI at end anhepatic phase and end surgery (p< .001, 0.01 respectively). UOP in anhepatic phase but not total UOP was significantly lower in GI (p< .001). Creatinine was significantly lower in GII in postoperative day1, and 3 (p; .02, .04 respectively). No significant correlation between CVP and SV at any measuring point in GII.
Conclusion: During LTx, TED guided optimal fluid management was comparable to low CVP technique regarding blood loss and transfusion requirements and had better impacts on creatinine and lactate.
1. CHEST / 134/1/ JULY, 2008
2. Liver Transpl 12:117-123, 2006
3. Br J Anaesth 2006;97:4-11

Variable		CVP baseline	CVP preanhepatic	CVP 30 min post reperfusion	CVP end surgery
SV baseline	Pearson Correlation	.165	.178	.150	.168
	Significance (2-tailed)	.279	.243	.325	.270
SV preanhepatic	Pearson Correlation	.072	.103	.054	.136
	Significance (2-tailed)	.636	.501	.727	.373
SV 30 min post reperfusion	Pearson Correlation	-.037	.103	.015	.037
	Significance (2-tailed)	.811	.499	.924	.810
SV end surgery	Pearson Correlation	.204	.300	.096	.037
	Significance (2-tailed)	.180	.045	.528	.807

[Correlation between stroke volume and CVP in GII]

DESFLURANE VERSUS PROPOFOL FOR POSTOPERATIVE SEDATION OF MECHANICALLY VENTILATED LIVER TRANSPLANT RECIPIENTS

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Background and aim: Careful drug selection and monitoring of adequacy of sedation can minimize the risks of over sedation and side effects. To compare Desflurane (Des) versus Propofol (P) sedation with regards to haemodynamics, recovery profiles, side effects and costs

Methods: A prospective randomized controlled pilot study involving 60 mechanically ventilated recipients. Equally randomized to be sedated with Des in air/oxygen 1 litre min^{-1} or P 4mg/kg/hr. Patient State Index (PSI) of SEDLine (Masimo, Irvin, CA) was used for sedation depth (50-75) and altering Des % and P intravenous infusion rate. Ramsay sedation score (RSS) was monitored as well. Fentanyl was used to assist sedation and additional analgesia. Transesophageal Doppler (TED) parameters were recorded hourly, corrected flow time (FTc) of TED was used for fluid optimization. Memorization of five words, Trieger dot, digit symbol substitution tests and response to eye opening were recorded.

Results: Systemic vascular resistance (SVR) and mean blood pressure (MBP) were better preserved with Des vs, P under comparable PSI readings between both groups at all measuring points (SVR, MABP and PSI after 2hrs sedation 908.93±139.5 vs. 617.6±104.5 dyn.sec.cm^{-5}, P<0.01 and 77.0±3.8 vs. 63.4±6.3 mmHg, P<0.01, 63.30±6.374 vs. 62.2±5.8,P=0.517 respectively), in contrast the mean RSS was consistently higher with Des compared to P, P<0.01 at all times. Rapid recovery with Des sedation vs, P (2.0±1.1 vs.13.1±4.4min, P<0.01). Eye opening (PSI>75), five words recall, trieger dot test and digit symbol substitution were better with Des. Less norepinephrine was required with Des (n=10) (33.3%) compared to P (n=23) (76.7%), (P=0.001). Cost was lower with Des (0.9±0.3 vs. 1.6±0.4 Sterling £/hour, (P<0.01). Ventilation duration shortened with Des vs, P (6.83±2.00 vs. 8.26±1.68 hour, P= 0.004) with comparable arterial blood gases at start (P>0.01). Fentanyl was frequently combined with P to reduce its effect on SVR and MBP. (483.3±168.3 vs, 100±0.00 µg, P<0.05). Total consumption of Des and P were (53.13±10.30 ml vs. 1010.33±205.06 mg)

Conclusion: Des sedation guided with PSI preserved better the haemodynamic parameters, enhanced recovery at a lower cost compared to Propofol. PSI was able to provide a consistent and comparable depth of sedation with two different sedative drugs as Des and P in contrast to RSS.

INTRAVENOUS FENTANYL PATIENT CONTROLLED ANALGESIA WITH AND WITHOUT COMBINED TRANSVERSUS ABDOMINIS PLANE AND RECTUS SHEATH BLOCK IN CIRRHOTIC PATIENTS POST- LIVER RESECTION

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SUGAMMADEX VERSUS NEOSTIGMINE FOR ANTAGONISM OF ROCURONIUM-INDUCED NEUROMUSCULAR BLOCKADE IN CIRRHOTIC PATIENTS UNDERGOING LIVER RESECTION: A CONTROLLED RANDOMISED STUDY

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