SESSION 11

Biochemistry of cancer, organ insufficiency and transplantation

Organized by R. T. Smoleński, M. Komoszyński
Serum level of oxidative stress markers during renal transplantation

Oral Presentation

Maciej Biernacki¹, Kamil Jankowski¹, Michał Woźniak², Zbigniew Śledziński¹

¹ – Katedra i Klinika Chirurgii Ogólnej i Transplantacyjnej, Akademia Medyczna w Gdańsku, ul. Dębskiego, 80-211 Gdańsk, ² – Katedra i Zakład Chemii Medycznej, Akademia Medyczna w Gdańsku, ul. Dębskiego 1, 80-211 Gdańsk

This study aimed to find the correlation of length of cold and warm ischemia times and oxidative stress markers concentrations in serum of patients after kidney transplantation.

63 patients, who underwent renal transplant operations, were involved. Blood samples were taken from jugular internal vein in five intervals: before operation, 2, 10, 15, and 60 minutes after reperfusion and carbonyl groups level and TBARS concentration were estimated. Control group consists of 10 patients, who underwent in our elective laparoscopic cholecystectomy. In control group blood was collected before operation and 60 minutes after beginning.

Increased level of protein carbonyl groups’ concentration was found in patients’ serum. The level was highest in 60th minute. Increased concentration of TBARS was observed in serum of patients after renal transplantation. But statistical significances only in 10th and 60th minutes of reperfusion were found. The correlation between warm ischemia length and percentage growth of protein carbonyl groups’ and TBARS concentration was found.

Bicistronic strategy for angiogenic gene therapy

Oral Presentation

Maciej Malecki¹, Malgorzata Przybyszewska², Przemysław Janik²


A manipulation of angiogenesis in vivo is one of the example of the successful gene therapy strategies. The overexpression of the angiogenic genes like VEGF, FGF or PDGF force significantly the new vessels formation and improve the clinical state of patients. Gene therapy method is very promising procedure but requires large amounts of pharmaceutical-grade plasmid DNA, however. In this regard we have constructed a bicistronic plasmid DNA vector encoding two proangiogenic factors, VEGF165 and FGF-2. The construct (pVIF) contains the internal ribosome entry site (IRES) of the encephalomyocarditis virus (ECMV) which permits both the gene of interest (VEGF165) and (FGF-2) to be translated from a single bicistronic mRNA. The IRES sequence allows for a high efficiency of gene expression in vivo. pVIF vector was characterized in vitro and in vivo. In vivo angiogenesis studies showed that bicistronic vector encoding two proangiogenic factors induces the new vessels formation significantly more than pVEGF165 or pFGF-2 alone. In our opinion the combined proangiogenic approaches of VEGF165 and FGF-2 is more powerful and efficient strategy than a single gene therapy method. We also postulate that IRES sequence can be served as an useful biotechnological tool improving efficiency of gene therapy trials.

Arginase activity in bile after liver transplantation

Poster

Dorota Scibor¹, Fathi Ashamiss², Alicja Chrzanowska¹, Zofia Poremb ska¹


Arginase (L-arginine amidinohydrolase, EC 3.5.3.1) catalyses the hydrolysis of arginine to urea and ornithine. It is a key enzyme taking part in several pathways in intermediary metabolism. In mammals liver it plays a fundamental role in the last step of the urea cycle and detoxification of ammonia. In extrahepatic tissues it produces ornithine, an important metabolite in biosynthesis of citruline, proline, glutamic acid and polyamines.
The aim of this work was to assess the usefulness of bile arginase activity after liver transplantation. The study included 15 patients diagnosed as liver cirrhosis who underwent total liver transplantation. Bile samples were collected from the patients every day after surgery, for 3 weeks. All samples of bile were kept frozen at -70°C until use.

We found that during the first and the second day after liver transplantation, the level of arginase activity was high and accounted from 100 to 1400 U/l. During the next days, arginase activity decreased rapidly to its normal range 30–50 U/l in bile of patients with good prognosis. However, in some patients, the fluctuations of arginase activity were observed, indicating the probability of graft rejection.

Our preliminary study demonstrated the presence of arginase in bile and showed that the measurement of its activity has the clinical merit for detecting hepatic lesion.