Report American Transplant Congress Meeting – May-June 2009 Boston for the Novartis Transplantation Advisory Board Grant

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This years American Transplant Congress (ATC) was organized in Boston, which is the capital and largest city of Massachusetts and one of the oldest cities in the United States. The congress was held from May 30 - June 4, 2009 in the famous John B. Hynes Convention Center.
The ATC is the premier educational event in the field of basic and clinical transplantation. ATC is a joint meeting, sponsored by the American Society of Transplant Surgeons (ASTS) and the American Society of Transplantation (AST). Approximately, 4,500 physicians, surgeons, scientists, nurses, organ procurement personnel, and pharmacists who are interested in the clinical and research aspects of solid organ and tissue transplantation joined this meeting.
This ninth edition of the ATC included a broad overview of both clinical and basic research in transplantation. Besides the already often discussed topics of renal transplantation, there was a lot of attention of new topics such as islet cell and stem cell transplantation. Because this meeting is so big, I will highlight some interesting topics that were presented.

The day before the congress officially started, several so-called “pre-meeting symposia” were organized. The aim of these rather small meetings was to get an overview of issues in transplantation and to catch up with clinical and basic knowledge. Topics such as: “Essential Immunology for the Clinician”, “Clinical Updates and Donor-derived Infectious Disease” and “Transplantation Immunology for the Basic Scientist”, “Hot Topics in Infectious Disease”, “Pediatric Transplantation”, “Management of Liver Cancer in Liver Transplantation”. I switched between “Essential Immunology for the Clinician” and “Transplantation Immunology for the Basic Scientist”, as I am currently a PhD-student (scientist), but I am also a medical doctor. I found those pre-meetings really useful to update my knowledge about certain topics, which was useful for understanding talks during the congress. I can, therefore, recommend others to attend those meetings.

Every day there were also the so-called “early-morning sessions” and “sunrise symposia“. I did not attend one of the sunrise symposia, but I did attend an “early-morning session”. These “breakfast-meetings” consisted of a small group of people (up

to 30-40), which made it possible to discuss topics in more detail. The topic of the talk I attended was “micro-RNA’s”, also called “sRNA’s” or “small RNA’s”. Although this topic was already briefly highly lighted during a plenary session by Prof. Phillip A. Sharp, who discusses the possibilities of modulating several cellular mechanisms by small RNA (sRNA), which may offer remarkable promises for therapeutic interventions, especially in transplantation. In the early morning session I heard more details on this topic, how sRNA’s are constructed and how they can interact in the cell by binding to the mRNA. I think sRNA are very interesting and promising as new approach of targeting function of cells, for example immune cells. Probably, in the next ATC we will more about this. Other early morning discussion session topics were for example: “can you assess transplant tolerance?”, “mTor inhibitors: where is the niche in kidney transplant?”, “dilemmas in living kidney donor selection”, update on the new kidney allocation system” and many more.

The ATC opened on Saturday 30th afternoon with welcome drinks in the poster exhibition room. Beside chatting and networking with other people, it offered the opportunity to view some posters, especially those concerning the field I work in. I think the poster sessions at the end of the day were well organized, although several hundreds of new posters every day is far too much. I therefore try to pick interesting topic based on the abstracts in the abstract book. The advantage was that something interesting could be found by every one.

During this meeting my main interest was (mesenchymal) stem cells as this is related to my own research project. I am investigating the potential of mesenchymal stem cells as novel therapy in transplantation, especially kidney transplantation, as mesenchymal stem cells have tissue-repair and immunosuppressive properties. There were several overview talks about mesenchymal stem cells, e.g. by Prof. Dazzi, but also a presentation of Dr. Baan, assistant-professor of our group.
One of the interesting findings was that co-infusion of mesenchymal stem cells with islet cells, increased the engraftment of these cells. This co-infusion may be also effective in other fields of transplantation.

On the final day of the congress, there was a very interesting talk given by Rudolf Jaenisch, Professor of Biology at M.I.T., on "Stem Cells and the Molecular Control of Pluripotency for Regenerative Medicine." It is already possible to transform adult stem cells in to embryonic stem cells by transvecting a few genes in these cells. By this mean, the cells have again differentiation capacity. Subsequently, these cells can be applied in several fields for tissue repair or creation of new organs. It is, for example, possible to construct a bladder ex vivo. Furthermore, development of kidneys is ongoing. Would it be the solution for the shortage of donor organs? Although the possibilities of this method seem to be unlimited, one of the potential risks of embryonic stem cells remains (teratogenic) tumor formation. These problems need to be carefully monitored.

The ATC closed by a session on the “Highlights 'What's Hot, What's New” and summarized the latest updates in transplantation, split up in “clinic research” and “basic science”. The clinical part focused on new developments in immunosuppression.

Besides new drugs such as belatacept, a selective blocker of T cell activation, there were many talks about minimizing or even altogether avoiding calcineurin inhibitors in kidney and/or liver transplantation in the interest of improving renal function.
One of the best-scoring basic science abstracts looked at TH17 cells in the process of allograft rejection. TH17 cells have been identified in inflammation, particularly in the context of autoimmunity. Under certain circumstances, TH17 cells appear to be able to mediate allograft rejection and also appear to be resistant to tolerance induction so they are resistant to regimens normally used to allow for organ survival. I think more research is needed to further address the role of this "bad cell type" in transplantation.

Also promising research is ongoing on the impact of antibodies, both allo- and auto-antibodies, on short and long-term transplant outcomes, particularly in kidney transplant and also in lung, heart and islet transplantation. In addition, new drugs with novel mechanisms of action are being tested to better control the production of antibodies, for example bortezomib, a proteasome inhibitor.

Besides research investigating manipulation of the immune system to prevent graft rejection, ischemia reperfusion injury was another hot topic. There were abstracts identifying the injury and evolving around what actually drives ischemia profusion injury. There were also some exciting presentations about islet transplantation to treat Type I diabetes. Not only the function and survival of those cells is investigated intensively, but also imaging and harvesting.
Another very high-rated abstract was from a group that has manipulated embryonic stem cells. Their abstract showed that these cells can be induced to become insulin producers and upon transplantation into a host seem to be able to regulate blood glucose levels. Furthermore, organ allocation policy was a hot topic of discussion at ATC 2009. All abstracts are printed in supplement 2 (Volume 9, 2009) of the American Journal of Transplantation.

Finally, I can also proudly mention that my abstract has been awarded for the International Young Investigator Award during this meeting. Although there was no plenary award ceremony, the AST committee organized a reception with all "young" investigator award winners and also several "senior" key investigators. This meeting aimed to promote networking and exchange of ideas. It was really nice to receive this encouraging price.

To conclude, I think the ATC was really worth visiting, as it provides interesting high quality presentations on all kind of transplantation related topics. Although the ATC was sometimes too big (e.g. 13 concurrent sessions), which made the choice of sessions not always that easy, it provided interesting topics for everyone. ◄