The talk was recorded by C. Nasadyuk, immunologist, PhD

INTERVIEW WITH PROF. ALEJANDRO MADRIGAL, THE PRESIDENT OF THE EUROPEAN GROUP FOR BLOOD AND MARROW TRANSPLANTATION

Prof. Alejandro Madrigal is a world-renowned scientist in the field of hematopoietic stem cell transplantation, the study of the main histocompatibility system in humans and immunogenetics, who also made a significant contribution to the science of immunobiological properties of umbilical cord blood. Scientific achievements of Prof. Madrigal in the field of immunohematology significantly influenced the development of hematologic transplantation at the stage of its establishment as a science and medical specialty.

From 1995 to date, Prof. Alejandro Madrigal is a scientific director of the Anthony Nolan Institute in London (UK), at which the world's first and largest hematopoietic stem cells registry is operated. Since 2010, Prof. Alejandro Madrigal heads the European Group for Blood and Marrow Transplantation (EBMT).

In addition to active research, clinical and teaching activities, Prof. Alejandro Madrigal, as one of the pioneers of cell therapy in the world, devotes a lot of time and efforts to the development of hematologic transplantology and hematopoietic stem cells registries in young and developing countries.

***Press**: Mr. Madrigal, it is known that the European Group for Blood and Marrow Transplantation conducts statistical analysis of the hematopoietic stem cell transplants from different sources, performed in Europe, evaluates their efficacy and develops protocols of treatment of hematologic and non-hematologic diseases, based on cell transplantation. It would be interesting to know, how you as EBMT President evaluate the place of umbilical cord blood among other stem cell sources?*

Alejandro Madrigal: Actually there are about 600 000 cord blood units preserved worldwide in public banks and this number is constantly increasing. And to date, more than 30 000 transplants of the umbilical cord blood hematopoietic stem cells were performed in the whole world. The voluntary donation of cord blood to the public banks is considered to be very noble and life-saving procedure. The update science presents many advantages of cord blood above the bone marrow or mobilized stem cells from peripheral blood of an adult donor. Thus in addition to immediate availability of the unit, the use of umbilical cord blood is characterized by the lower incidence of the chronic «graft-versus-host» disease. The limitation of the use of umbilical cord blood is the number of cells. But actually a number of innovative methods were developed to solve these problems, and we heard about them at the World Cord Blood Congress 2013. The manipulations with the umbilical cord blood cells, aimed at facilitation of engraftment and cell expansion are promising.

***Press**: Professor, we know that in addition to your successes in practical transplantology, you are also a well-known scientist in the field of exploring the immunologic properties of umbilical cord blood and that you are engaged in the study of the human umbilical cord blood T-lymphocytes. What is the state of the art in this field and how far are we from the wide introduction of GCP cell products, containing T-lymphocytes in clinical practice? Also, to your opinion, what will be the indications to T-cell immunotherapy?*

Alejandro Madrigal: The reality of the public cord blood banking is so that only about 20% of the units collected are eligible for further storage and future transplantation. So a large number of units is wasted, but this is a valuable biological material, that contains a large variety of different cells, that could be useful for cell therapy or immunotherapy. In addition to $CD34^+$, $CD133^+$ cells, the umbilical cord blood also contains T-lymphocytes, natural killer cells as well as the population of very small embryonic-like stem cells was discovered. The latter could be useful for the differentiation into other tissues as well as the other therapeutic strategies are considered, although they are actually controversial.

Concerning the umbilical cord blood T-cells, the latter contains a large number of T-cells of 2 populations – effector and regulatory cells. And we are able to isolate these cells, to manipulate them and to use them clinically for the controlling of posttransplant complications and immunotherapy for other immune disorders, f.i. lupus erythematosus, rheumatoid arthritis or even diabetes. But more experiments and clinical trials are required to confirm the efficacy of such a treatment. At the moment we have received a grant from the European community for the project, aimed at the evaluation of the cord blood derived T-regulatory cells for the treatment of «graft-versus-host» disease, refractory to steroids. And I think it's very promising!

***Press**: And what is your attitude to iPS-cells? To your mind, is this discovery rather of fundamental value or do you consider the wide application of iPS-cells for the treatment of diseases in humans?*

Alejandro Madrigal: I think, the discovery was fantastic! As the possibility of retrodifferentiation of the cell was shown, what was supposed to be impossible! It was a remarkable discovery, opening huge opportunities! But we haven't yet learnt how to produce what we need from iPS-cells through differentiation. Theoretically it is possible to get, f.i. liver tissue from iPS-cell, but to date we don't yet know how to switch off these cells later. So the discovery of iPS-cells is very promising in regards to the production of tissue products but the matter is that it is very difficult to control these cells.

***Press**: I wonder, what do you know about Ukraine? Have you met Ukrainian scientists on international congresses and what would you like to wish our specialists?*

Alejandro Madrigal: Yes, of course! Ukraine is in my mind and I have friends in your country as well as I know you for a long time! I highly respect Ukrainian scientists and I highly respect what they are doing. Also I have a title of Doctor Honoris Causa of Odessa Medical University. I send my best wishes to Ukrainian colleagues and I wish them success!

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