CHM2016 – 2nd Choroideremia patient symposium / patient seminar

by Klaus-Peter Schwartz

The seminar took place from 26 to 28 August 2016 at the Wilhelm-Kempf-Haus in Wiesbaden-Naurod. It was very convenient that presentations, board and lodging were all located in one house, saving long journeys. Organizer Michael Längsfeld had suggested an international networking of CHM-affected back at the first seminar in 2014. The attendance of guests from France, Germany, the Netherlands, New Zealand, Finland, Austria, Serbia, Spain and the USA was a first success of these efforts. This situation called for simultaneous interpreting, provided by Ms. Batistic and Ms Hopp, who did an excellent job, which all guests agreed upon.

The seminar started with a short introduction of all participants. It was very impressive to see how different the various courses of the disease were and how patients were adjusting and coping. This was an important item on the agenda, since one was able to meet kindred spirits.

The first medical lecture Current Developments in Diagnostics and Treatment of Choroideremia was held by PD. Dr Preising from the Justus Liebig University in Gießen. He discussed the different methods on how to diagnose CHM and gave an overview over the theory of genes and genetic disorders, e.g. the interaction between REP 1 and 2.
Furthermore, he presented therapy approaches for various genetic defects, which had been implemented in various animal models. Researchers intensely work on developing drugs to stop the progression of the disease or cure various genetic defects. Dr Preising appealed to participants to get genetically tested and to register at specialized centers. Only genetic analysis can confirm if the patient suffers from choroideremia.
Even if there is no therapy available today, there might be a solution in the near future. Registration helps to facilitate contacting the patients. Also, this provides scientists with an overview over how many patients suffer from such a specific genetic disorder.

Ms. Vieira from the UK-based company NightstaRx discussed the developments in gene therapy. The company has been developing gene therapy to treat choroideremia in collaboration with Prof McLaren from the Oxford University since 2005. The therapy has

been released for study purposes and implemented in Oxford and Tuebingen. Studies have shown that central vision was improved but not peripheral vision. Ms. Vieira also urged the audience to participate in the studies. Since CHM is a rare disease with a very low number of affected, the pharmaceutical industry is less interested than in more common diseases and there are only a few institutes working on developing a genetic therapy. That is why one should use every opportunity to promote research.

After the individual presentations, participants asked questions, delaying the program slightly.

Mr Reichel continued with his speech on "How to Process and Cope with the Disease" on the second day of the seminar. This very authentic contribution - Mr Reichel suffers from a retinal degeneration himself - has encouraged many participants to face their disease. Based on his own experiences, he was able to show that a blow of fate in the form of massive health limitations can also be the opportunity for a new beginning and a happy life. Mr Reichel has undergone training as a psychological counsellor and offers his services on his website www.reichel-beratung.de.

Prof. Dr. Issa's presentation was titled "The NightstaRx Study for Gene Therapy for Choroideremia at the University Eye Clinic Bonn". This observation study included 14 patients suffering from choroideremia. In determining who of the 32 applicants was to participate, a genetic diagnosis was required. Only this examination can correctly identify the disease. Prof Dr. Issa explained how such a gene therapy is developed and what very complex steps are involved in order to reach the finish line. Special consideration was given to the fact on how to transport the gene to the exact location where it is needed. During this study no therapy was applied, but rather data on the disease progress collected. This is needed to better understand the disease and to compare disease progression of treated patients more precisely.

The presentation on "How to Enforce My Rights as a Visual Impaired Person with Authorities and Health Insurance Companies" was held by Dr. Richter of RBM Marburg.
He provided tips on how to write applications, which important deadlines to keep and he pointed out that every application for aid devices requires an appropriate explanation on the necessity of such device. It is important to notice that the officer in charge might not have any experience with blind people, but generally wants to help if the request has been

granted. The legal consultation firm also provides assistance in social law, which is described under http://www.rbm-rechtsberatung.de/ . Consultation is free of charge for members of Pro Retina.

PD Dr Stingl from the University Eye Clinic Tuebingen presented "Hereditary Retinal Degenerations Service in Tuebingen" in general and the retinal implant Alpha AM in specific during the 6th lecture of the conference. The special consultation service advises patients suffering from a hereditary retinal degeneration or from rare chronic diseases. The consultation office was founded in 1989 and has since seen many patients from all over the world. At the institute, clinical therapeutic studies are undertaken, functional diagnostics developed and stem cell research conducted. This is also where the first German gene therapy study was implemented.

PD Dr. Stingl informed the participants on the Retinal Implant Alpha AMS during the second part of the lecture. In general it can be said that those implants turn blind people into people with visual impairments, who can see black/white outlines and objects at best. Using those implants in patients with a residual visual capacity is thus not advisable. The implant is implanted in front of the retina and transmits electrical current to the brain. It takes over the function of rods and cones.

A study was conducted between 2010 and 2013 with the previous model Retina Implant IMS. 28 patients from Tuebingen, Dresden, Oxford, London, Budapest, Hong Kong and Singapore participated. Another study with the more recent implant AMS started in 2014 in Tuebingen, Dresden, Kiel and Oxford and will continue until 2017. Both implants IMS and AMS received the CE marking and have been approved as medicinal products. The physical prerequisites and the procedures of such an operation were discussed as well. The studies were mostly successful, promoting further research in this area. Information can be obtained by writing an email to neuro.oph@med.uni-tuebingen.de or katarina.stingl@med.uni-tuebingen.de . To make an appointment for the Hereditary Retinal Degenerations Service Tuebingen please call Ms Nestler at 07071 / 29-87429 or Ms Cankaya at 07071 / 29-83736.

Prof. Dr. Fischer, a researcher at the Oxford University and the University Eye Clinic Tuebingen, held a lecture on "THOR Study for the Development of a Genetic Therapy for Choroideremia at the University Eye Clinic Tuebingen", which was very informative.

Application of the treatment was presented with a video of such an operation. The first such operation in Tuebingen took place in January 2016. Results give reason for cautious optimism. It is always difficult to find a suitable method to objectively measure vision, thus making the patients comparable to one another. Six patients from Germany took part in this study, some of whom were present at the seminar. They reported about the results and their own experiences. All patients had in common that after approximately three months pre-operation vision was restored or even improved.

It will be interesting to see further developments of the study which shall be concluded by the end of 2017. The goal of this study is to determine the best disease stage to help patients. Prof. Dr. Fischer discussed the different eye diseases that are being researched and that could be suitable for gene therapy as well. Among others, he mentioned the CNGA3 based achromatopsia.

In the evening, the international participants met with Michael Längsfeld and founded an international CHM association, the first prerequisite for a faster and more intensive information exchange in research and development.

The last day of the seminar started with the presentation of PD Dr. Wagenfeld from the University Eye Clinic Hamburg on Pixium Retinal Implants in Choroideremia. The basic principle is similar to the Alpha implant. Dr. Wagenfeld differentiated two different approaches: subretinal and epiretinal implants. The former is implanted underneath the retina, while the epiretinal implant is implanted onto the retina. The epiretinal implant is already in clinical usage under the name IRIS, while the other implant is still in the stages of development under the name of Prima and will be ready for human use in 2016.

This lecture also presented the surgical procedures involved using a video. The time of operation for this implant is shorter than for the Alpha implant. It is important to note that the brain needs to get used to the new information. A new learning process is initiated, which takes some time. This approach seems to be very promising. But it should not be put aside that this implant can turn a blind person into a visually impaired person. For more information, please contact Mr Tim Schade (Tel.: 040 / 7410-18878, Fax: 040 / 7410-55017, Email t.schade@uke.de).

The last presentation was given by Dr Ferreira from the Center of Regenerative Therapies

Dresden CRTD on the topic Stem Cell Research for Choroideremia Treatment. After a basic introduction on the function of rods (black/white vision) and cones (color vision) and their respective localization in the retina, Dr. Ferreira explained choroideremia from the perspective of stem cell research. There are three different ways to treat the disease: retinal prosthesis, gene therapy and cell replacement therapy. The latter is the goal of stem cell research. Herby, cells are transplanted into the retinal pigment epithelium (RPE). Stem cells can be manufactured from embryonic cells or from cells of the patient to be treated. This endogenous cell manufacturing has the advantage that implanted cells do not cause any immune response in the patient.

Dr. Ferreira explained the timeline from stem cell manufacturing to the transplantation into the RPE. The video of a mouse after transplantation was also very descriptive. There was first success yielded worldwide in treating RPE disease, but unfortunately none yet for choroideremia.

Then Tom Driscol, one of the US participants, discussed the donation tradition in the United States and the commitment of everyone involved. He reiterated that it is the small amounts not the large ones (Everyone gives as much they can.) that promote research in specific areas.

For us, this was the first symposium of its kind.
There is probably no better way to learn about the recent developments in science for the treatment approaches of choroideremia. The organisation of the event was a success all participants agreed on this. It was a very important weekend with many helpful information, encouraging tips and new contacts. We would like to thank everyone involved in the organisation for this very successful event and we are looking forward to the next CHM symposium.