NLTG and NLPG 23.10.19

Venue: Hotel Opera, Oslo October 23. 2019

Morten Hagness open and welcomed 20 registered participants to Oslo. Due to lack of capacity in Oslo both meetings were held in the same day. Whether this would be a good solution for future meetings was discussed during any other business.

The minutes from NLTG meeting in Gothenburg 28th of March 2019 were reviewed with focus on the action points. There was a brief discussion and clarification of the following point from the previous meeting: "*It was agreed that patients diagnosed with **subacute liver failure can** be listed on a regional waiting list for a liver transplant with the intention to transplant the patient with a regional donor. If/when the patient deteriorates to the degree that a high urgent status is reached the patient **can** be listed on the Scandia Transplant high urgent list."* It was specified that that the meaning of acute/subacute is not acute on chronic liver failure and that the current criteria for high urgent call must be met in these cases. The intention of the statement was to give national priority within the two centers in Sweden. The other points were reviewed and no additional adjustments were recommended.

Centerwise update: (all)
All centers shortly presented their liver transplant activity the so far this year: **Gothenburg** had 72 LTx, with 5 pediatric with two from living donors. Seven donor livers were utilized from the collaboration with Iceland. In **Stockholm** there had been 68 LTx, one from living donor, one pediatric LTx. **Helsinki** reported they had over 100 donors so far, and had performed 55 LTx, 4 pediatric donors. There was a discussion on the reason for the relatively low exploitation of livers from the donors. Dr Nordin argued that the there are a lot of old livers from donors in their 70ties and 80ies and that there are difficulties in the organization in order to procure livers for export. Dr Bennet argued that the Finnish reason for turning down livers should be assessed, as these livers potentially could be used within Scandiatransplant or even Eurotransplant. In **Copenhagen:** 52 LTx were performed of them 5 pediatric. **Oslo** is still waiting for approval to reintroduce the DCD program. 76 livers, with 8 pediatric Ltx were performed so far. In **Tartu**: 9 Ltx were performed. There are two liver transplant surgeons in Tartu; there are currently 5 patients on the waiting list.

NLPG:

Statuts on pediatric liver waiting list: (Ilse Duus Weinreich)
Ilse went through the split liver potential in each center from 2016 to September 30, 2019. The split liver potential in this period range from 6.9% to 9.5% for the whole Scandiatransplant area. The utilization of livers fulfilling the criteria for splitting range from 20% to 29% in the same period. So far in 2019, 31 split livers were not used for pediatric recipients. The most frequent reason was logistics (9), no procurement (7), Offered but refused (5), no matching pediatric recipient (4) and medical reasons (4). There was a brief discussion on the reason that 9 out of 31 splittable livers were not procured, and why 9 livers were not procured due to logistics in Helsinki and Oslo. There was agreement that both centers should look into these 9 patients and analyze what happened. After a suggestion from Gothenburg, there was recommended that the reason for not splitting a splittable liver should be commented in the free-text field in Yaswa.

Ilse went through the import and export of adult donor livers used for pediatric recipients. Six of 16 eligible livers have been import/exported so far 2019, and 42 of 91 (46%) in the whole period. The number of pediatric patients on the waiting list has increased from 6 in second half of 2017 to 23 in first half of 2019, while the number of transplantations has decreased from 23 to 10 in the same period.
There was further agreed that these presentations were very useful, but should be sent out before the meeting .Further should missing data on pediatric donor from Copenhagen be included in the next presentation. A suggestion from Foss in Norway was to make a standardized center-wise report form pediatric donorlivers/ splittable livers.

ABOi pediatric liverTX (Bennet/ Dahlgren)
Gothenburg a presented results from ABOi pediatric LTx from children less than two years. Excellent results have been reported from ABOi LTx utilizing Rituximab from Korea for adults LD grafts. Reported results are generally good for pediatric patients, however data are limited. A study from Texas (Mysor; Pediatr Transpl 2018) utilized a titer-based management protocol with excellent results in 10 patients. 3 case reports from Sahlgrenska with 3 pediatric ABOi-LTx recipients (3 years old, 7 months and 7 months) treated with Mabthera and IA was presented, no complications related to this treatment was identified. One of the patients died from tumor relapse, while the others were alive with good graft function. The Gothenburg protocol for pediatric ABOi LTx was presented which is a titer-based protocol. For patients under 2 years; Mabthera and IA is used when Anti-A/B≥ 16 otherwise standard quadruppel immune suppression is given. For patients over 2 years old, Mabthera and postoperative IA are given to all patients and IA pre-LTx is given if Anti-A/B≥ 16.

In the last meeting Gothenburg march 2019, it was agreed that for *pediatric recipients < 2 yrs., with absent or low anti- ABO titers (< 1:16) will be offered ABOi livers grafts if the recipient center states this on the common pediatric waiting list and if no other suitable ABO compatible pediatric recipient is listed or has been declined by that center*. Gothenburg proposed to list patients less than 2 years for "any blood group" in order to increase the chance to find a size matched liver. The new proposition from Bennet was that:

- Children under 2 years: The patient can be listed with any blood type if the center has stated this and be given the same priority as ABO compatible grafts.
- Children over 2 years: First ABO-identical, then ABO-compatible livers should be offered.

There was a discussion on when whether this age differentiation is necessary and that it would be more appropriate that each center state which blood group is wanted when listing the pediatric patient. The proposition is to be discussed further on next meeting.

Parameters for Nordic pediatric LTx registry: (Bennet)
A working group working on the suggested pediatric liver transplant registry was complemented with members from Helsinki and Tartu. The group consists of Gothenburg: Bennet, Oslo: Line, Copenhagen: Nicolai Shultz, Stockholm: Carl Jorns; Helsinki: Miko Pakarev and Tartu: Andres Tein. This group will look for missing points in the data already registristred in YASWA. A suggestion of outcome variables was presented and this is to be followed up on next meeting.

Quality Registry for transplant surgery and state of the art tools for scientific analysis. Possibilities for enhanced Nordic collaboration? (Einar Martin Aandahl)
Einar Martin, transplant surgeon from Oslo and co-founder of the company Ledidi, demonstrated the new Prjects platform. This is an end-to-end cloud solution for data capture analysis designed for clinical research projects. Oslo is planning to incorporate the Prjcts for all scientific projects including the new international colorectal LTx registry, Gothenburg also showed interest in the solution.

NLTG:

Payback-time: *Ilse Duus Weinreich*

There have been 82 paybacks since December 1. 2017, the median payback time is 113 days(range 2- 841 days). The numbers of livers on the payback list has declined from 24 a year ago to 13 livers now, and the median payback time is 138 days now compared to 168 days a year ago. There are currently 6 cases waiting for payback for more than 6 months. No available recipient is the most common reason for decline.

Status on ELTR data export: *Ilse Duus Weinreich*

The data exchange authorization letter between NLTR and ELTR has been signed by Oslo, Gothenburg, Stockholm, Tartu and Copenhagen and first test export of data to ELTR was in January 2017. Complete data extraction from NLTR was shared with ELTR in September 2018 and 2019.*'For various administrative or technical reasons that do not relate to the Nordic data, we will be a little behind in preparing the data for the current ELTR update'* Vincent October 16, 2019. The original plan was to cooperate with Vincent in order to link missing linkage between patients in NLTR and ELTR. In June 2019 the strategy was altered in order to save time to start extractions and then the problems of discordant patients between NLTR and ELTR will show up.

All centers (data controllers) that enter/ collect data into the registry must have a data processor agreement with this registry (data processor). The responsibility lies with the data controller. 1st proposal has been prepared and sent to all centers. Ilse has taken the initiative to make the draft on the behalf of the participating centers. In the agreement the backup requirements are toned down, because all data are in NLTR, loss of data is not a problem for our centers. Also audit visits are toned down; otherwise the agreement is a standard data processor agreement. This point is to be taken followed up on next meeting.

Allocation of DCD livers in the Nordic countries (All)
Sweden gained experience from Edinburgh and starting the DCD-program this/next year for selective donors and recipients. In Norway the method evaluation process is not ready yet, and the reintroduction of DCD using NRP is pending. In Denmark there is an ongoing discussion regarding NRP and the DCD is not yet established. There was agreement that allocation for DCD donors must be taken from case to case as this method is not yet established and whether NRP will be used or not in the centers planning to implement DCD.

Ex vivo liver perfusion: (All)
Gothenborg and Stocholm are planning to purchase machines. They initially plan to do hypothermic perfusion to get the experience and then work on normothermic perfusion.
Oslo has purchased the Liver-assist machine and implementing this in both experimental and clinical use in near future**. Copenhagen** is also planning to buy a machine but have not yet decided which machine to buy.
A common protocol for machine perfusion between the centers was briefly discussed, preferably for hypothermic oxygenated perfusion, the potential for doing so will be pursued in the following meetings.

Standardization of CT measurements of donor livers (Bennet)
The Nordic kidney group stated in 2018 that in the majority of cases contrast-enhanced CT-scans in donors are not a problem as long as diuresis and adequate hydration is observed. The renal surgeon should be informed if contrast enhanced CT is planned in order to discuss any concern. Since Line introduced the use of AP diameter for size fit in 2015, both Gothenburg and Oslo have used this routinely. Bennet showed pictures of a donor of 195 cm, 90kg with a liver fitting nicely into a recipient of 182 cm and 62 kg, (AP diameters about 18 cm in both). He further showed that the AP diameter is integrated into their waiting list. A study on from France on multiphase whole body CT on 90 potential donors, identifying 10 donors with tumors was presented. The benefits of a CT scan in donors comprise the use of AP diameter to find fitting recipients, the possibility to assess anatomy/ accessory arteries and to exclude malignancies. A prospective

study evaluating the benefit of donor CT scans were proposed from Gothenburg. An evaluation form for the potential benefit of donor CT scans were presented and input given to this form. An updated version is given in next meeting.

Ongoing studies:

Factors related to waiting list mortality was presented by (Victor Renneus Guthrie/Jorns) They showed an increased wating time for bloodtype O and B, and for women.

The Swedish alchol study was already published and briefly showed. Due to lack of time, the work on chol-angiocarcinma, the results of hepaticodudenostomy in Norway/and Denmark and the DSA study was not formally discussed and is postponed to next meeting.

Any other business:

Per Lindnér brought up what status acute graft failure after LTx in the studies for colorectal metastases should be offered. It was agreed that in this situation a Kind request would be appropriate.

In this meeting both NPLTG and NLTG was held at the same day. It was agreed upon that this could be a good solution if program was not too extensive. The importance of the dinner and social meeting point was stressed and if both meeting is placed on the same day they should be scheduled early in the morning with a dinner on the previous day. Whether this should be applied on the next NPLTG/NLTG meeting is to be decided in next meeting in Stockholm.

Next meeting: Stockholm NLTG: March 18th 2020.

Morten Hagness and Ammar Khan