

Our mission has successfully ended on last Monday and we are all back home safe. The children treated were all in stable and good conditions when we left them. There should be no problem for Bruno Murzi, who will arrive today. This year our mission was specially difficult mainly because of the poor physical conditions most children were in, many presenting with chronic infections and advanced stage of cardiac disease.

### Infections

Most patients presented with respiratory infections. Based on our experience from last year, we have decided to send 2 members (cardiologist and surgeon) earlier than the rest of the team to start with screening of the patients and with antibiotics in those to be operated on. However, for some of them the duration of antibiotic treatment was too short, so that postoperative higher and longer needs for oxygen and vasoactive support was seen. This may also have been part of the cause for the death of the TOF patient.

### Heart disease

Basically all patient presented in a state of extremely advanced stage of heart disease, we did not have a single patient on the list with simple and uncritical heart disease. Therefore this year, the main challenge was to weigh the risks and benefits of a treatment in each child. In the group of patients with rheumatic heart disease, most presented with severe mitral stenosis and/or regurgitation with severe pulmonic systolic arterial hypertension of 65-90mmHg and valves barely amenable to repair. Therefore and especially under the present condition, that no prosthetic valves for bailout valve replacement was readily available made careful selection absolutely crucial. Furthermore, thoughtful repair avoiding overzealous reconstructive measures to obtain the best result in favor of a less ideal but under these circumstances optimal result had to be performed. But still, complex repair techniques had to be applied in most cases, i.e. leaflet patch augmentation, chordal cutting, chordal replacement by artificial chords, fenestration and/or mobilization of fused subvalvular apparatus, commissurotomy, annuloplasty etc. The obtained results were good in all with only residual mild to moderate regurgitation in one and greatly diminished gradients in all with still decreasing gradients during echo follow-up postop. A gradual decrease of these gradients by 1 mmHg per week is typical for the months to come. Still, all these repairs will have to stand the test of time...

In the group of patients with congenital heart disease as well, all presented in severely advanced stage of disease. The two with cyanotic heart defects, the DORV with PS and the TOF were both very problematic. The first, after having had a BT shunt via thoracotomy 2 years ago, was intended to undergo total repair by your team, but was cancelled for reasons unknown to me. As I operated on this child, I first controlled the BT shunt and ligated the small PDA. After putting the child on CPB uneventfully, ligating the BT shunt and cooling to 26°C, the aorta was clamped and cardioplegia given. When opening the right atrium, an uncontrollable return of arterialized blood to the left atrium and a simultaneous untreatable drop of systemic pressure occurred, which led us to close the atrium as quickly as possible, leaving a vent inside, opening the aortic clamp and establish a heart rhythm. Gradually, the systemic pressure rose again to normal. After reopening the ligated BT shunt, sats went down during weaning from CPB, therefore a central shunt 5mm was created. Then, weaning from CPB was uneventful. Luckily this child awoke without any cerebral damage and had a smooth course thereafter. However, long standing cyanosis must have led to formation of important systemic-pulmonary collaterals, which were unknown to us and almost killed this child. Before any further attempt for surgery is undertaken, this child will need a cardiac cath for further evaluation.

The other child with TOF had a technically uneventful transatrial, transpulmonary repair, needing a transannular patch after commissurotomy of the dysplastic pulmonary valve and infundibular myectomy with a residual gradient of 40. Postoperatively, this child showed persistent low systemic pressures not amenable to volume load and vasoactives. Despite only mildly impaired biventricular function in TTE, SR without heart block and no residual defects, the child developed multi-organ failure and died 3 days postoperatively.

The third child which is worthwhile mentioning is the 9month old child with large ASD, VSD and PDA, which had been seen for pneumonia and heart failure already 6months ago and was repeatedly hospitalized for the same reasons since. After sternotomy a massively dilated and severely impaired RV was present with a large zone of infarction of the free wall and a large dyskinetic inferior zone. Any attempt to perform a repair would have lead to disaster, therefore the chest was closed again after ligation of the PDA and without further measures. I don't think this child can be offered more than just supportive care. These examples demonstrate that we are not yet ready to handle this case complexity under these circumstances well enough.

Therefore to us, there may be 2 solutions available. Either, we refrain from offering repair – and possibly also palliation such as BT shunts - to such children like older cyanotic ones and restrict our efforts to those, who may have a greater chance to be cured with one single operation; or we accept them and evaluate them more thoroughly, i.e. by cardiac cath! We feel, that as long as the cath lab is struggling with difficult problems and is mostly and probably for a longer time not available, and that most children with cyanotic defects present with complex defects and usually rather late, and under the circumstances of limited resources, the decision to operate on them must be taken very carefully and restrictively. Additionally, we feel that communication between the teams can be improved as the example above shows. There must have been a reason why the child had been cancelled from the program and we should have probably have to know that. Furthermore, earlier knowledge about the children on the waiting list would make planning easier.

### Teaching

As every year we have gradually increased the involvement of our Eritrean collaborators under supervision and with teaching. Their individual capabilities showed large differences in that some still did not seem to have learned anything to the point of being dangerous for our patients, while others were eager to learn and showed considerable progress in their professional capacities. This year Barbara Sollberger had the opportunity to start training a young nurse in the field of CPB. We have again made clear to Dr. Habteab and Dr. Yosef that we ask them to have 2-3 of their own people to be taught behind everyone of us in the future. Again this year Dr. Tsegereda was away for most of the time during our stay. We think, that her simultaneous absence should be avoided, since she is an important member of the team interconnecting our and her people. We are sure, that her travels abroad can be arranged around our presence.

### Documentation

Since our first mission we have documented our surgical treatment with surgical reports and assessed our quality by documenting observed complications. This year we have added detailed reports about the postoperative course on the ICU and intermediate care, adding suggestions for further treatment and follow-up. This is especially important with respect to passing over important information to other teams and to the local responsible physicians. We think, we should reach a certain minimal standard with all teams concerning reporting and quality assessment in the future.

### Implants

In order not to have to organize cardiac implants such as mechanical valves and rings for each mission we decided to ask Sorin Inc for help to import such implants officially to Eritrea to have them available on stock at any time. Sorin has agreed to support us and has offered us a very good price. I took the opportunity to talk to the director of the National Pharmacy, who is responsible for the import and production of any medical material in Eritrea and who assured us his collaboration. Contact has already been made between the Sorin officials and the director. We will have to regulate the use and payment of these implants, which are meant to be used by the cardiac surgeons of all Hammerforum teams at the IOCCA. I will make a detailed proposal later.

#### Summary

In summary, we have again seen similar medical challenges caused mainly by long standing heart disease, late referral and infections. Overall however, children seemed not to suffer from famine compared to last year. Nevertheless, careful selection and critical evaluation is crucial more than ever, especially if considering complex defects for repair and may necessitate a minimal preoperative treatment with antibiotics, cardiac cath in some and improved communication between our teams.

#### Participants

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