**Supplement 1.**

**List of primary diagnoses per group**

Diagnoses are based on a combination of pre- and postnatal assessment.

Categorisation was performed by prenatal ultrasonographer(SE/AK/FJ) with the consultant maternal-fetal medicine specialist(MH) and the pediatric cardiologist(LR).

**Overview of cases**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | | **Oxygen delivery to the brain** | | | **Total** |
| low | mixed | normal |
| **Flow through the aorta** | reversed | 0 | 11 | 0 | **11** |
| obstructed | 0 | 15 | 28 | **43** |
| normal | 21 | 43 | 24 | **88** |
| **Total** | | **21** | **69** | **52** | **142** |

**Normal flow + Low oxygen delivery to the brain**

Oxygen-poor blood filling the aorta, with normal aortic arch flow.

Diagnoses: Transposition of the great arteries, either with or without a small ventricle septal defect.

**Obstructed aortic flow + normal oxygen delivery to the brain**

Biventricular heart defects, with left ventricle outflow tract obstruction, presenting with antenatal forward aortic arch flow. Some diagnoses present with small mitral valve and restricted atrial right-left shunt.

Diagnoses: Aortic valve stenosis, hypoplasia/coarctation of the aorta, interrupted aortic arch.

Shone’s syndrome. Persistent left caval vein with LV inflow obstruction. Premature closure of the foramen ovale. Congenitally Corrected TGA with coarctation of the aorta.

**Reversed aortic arch flow + mixed oxygen delivery to the brain**

Severe aortic obstruction, presenting with antenatal reversed aortic arch flow. Univentricular heart defects.

Left-to-right shunt at atrial level (mixed blood reaches the brain through the duct and reversed aortic arch flow).

Diagnoses: HLHS. Aortic stenosis with progressive left ventricular hypoplasia. Unbalanced AVSD with aortic atresia. Congenitally Corrected TGA, RV hypoplasia with aortic arch hypoplasia.

**Obstructed aortic arch flow + mixed oxygen delivery to the brain**

Biventricular heart defects with abnormal connection of the great vessels and a large VSD, or univentricular heart defects, or (un)balanced AVSDs.

Intracardiac mixing occurs at atrial (a) or ventricular (v) level.

Either of above, presenting with antenatal aortic obstruction, with forward aortic arch flow (aortic arch hypoplasia, coarctatio, or aortic valve stenosis).

Postnatal intervention necessary to palliate or repair aortic obstruction.

Diagnoses: Double inlet LV (a). Tricuspid atresia (a). Complex TGA with VSD/DORV and/or ventricular hypoplasia (a/v). Unbalanced AVSD (v) with aortic obstruction.

**Normal aortic arch flow + mixed oxygen delivery to the brain**

Biventricular heart defects with abnormal connection of the great vessels and a large VSD, or univentricular heart defects, or (un)balanced AVSDs.

Intracardiac mixing occurs at atrial (a) or ventricular (v) level.

Either of above, presenting with antenatal normal aortic calibre and flow.

Diagnoses: Absent left AV connection, DORV (a). Absent left AV connection, DORV (a). Double inlet LV (a). Tricuspid atresia (a). HRHS: pulmonary atresia or critical stenosis (a). Tetralogy of Fallot / PA with VSD / Fallot-like DORV (v). Truncus arteriosus / AP window (v). (Un)balanced AVSD (v) with normal outflow.

**Normal aortic arch flow + normal oxygen delivery to the brain**

Biventricular heart defects, presenting with antenatal normal aortic flow.

Diagnoses: small VSD. Ebstein’s anomaly (no hydrops/normal cardiac output). Tricuspid dysplasia. Pulmonary stenosis (not critical). Absent pulmonary valve. Persistent left caval vein without LV inflow obstruction. Right aortic arch. ccTGA without additional cardiac defects. Aneurysm of the interventricular septum or cardiac diverticulum. Rhabdomyomata. Miscellaneous (scimitar, ASD, PAPVR, dextroposition).

**Abbreviations:**

ASD atrioseptal defect

AV atrio-ventricular

AVSD atrio-ventricular septal defect

ccTGA congenitally corrected transposition of the great arteries

DORV double outlet right ventricle

HLHS hypoplastic left heart syndrome

HRHS hypoplastic right heart syndrome

LV left ventricle

PAPVR partially aberrant pulmonary vein return

RV right ventricle

TGA transposition of the great arteries

VSD ventricular septal defect