SUMMARY

Detailed analysis of 150 patients with patent ductus arteriosus among those admitted to Paediatric Department of Maadi Armed Forces Hospital between June 1978, and June 1993 was carried out aiming at :

Identification of the presence of associated congenital anomalies in the pateints with patent ductus arteriosus in the study.

Incidence of various types of associated congenital cardiac anomalies and extra cardiac anomalies with patent ductus arteriosus in children in the study.

As regarding the sex distribution , 46% were males and 54% were females. Their ages ranged from one week to 15 years.

The study included:

* Careful history taking.
* Physical examination.
* Electrocardiography.
* Radiography

* Echocardiography.

* Cardiac catheterization

* Angiocardiography

* of the cases submitted to surgery, the results of surgery and verifiction of the presence of lesions in our patients.

The clincial features of the patients with PDA depend upon the magnitude and direction of the shunt and depend upon the type of associated cardiac anomalies with PDA.

All patients were assessed clinically. Most of our patients (about 96%) had a continuous machinary murmur on the pulmonary area due to presence of left to right shunt through PDA.

Most of our cases had cardiothoracic ratio of more than 55% with central plethora during assessment of chest X-rays.

There is relation between large ductus and cardiac enlargement in chest X-ray in our cases.

The electrocardiogram was helpful in the diagnosis of PDA. 70% of our cases had ductus septal Q waves in the precordial leads and V_{5-7}, 86% of our cases had tall R waves in V_{5-7}, and 80% of our cases had tall T waves in V_{5-7}.

The echocardiogram was helpful in the diagnosis of PDA. The most commonly recognized feature of PDA is visualization of PDA and detection of blood flow through PDA.

Echo findings are consistent with PDA in 84% of our cases.

Definitive diagnosis of PDA was made by cardiac catheterization and angiocardiography.

Cardiac catheterisation and angiocardiography were found mandatory in our patients to measure shunts, flows and resistances as well as to detect any other suspected anomalies.

In our study, PDA was confirmed by angiocardiography in 100% of our cases and by angiocardiography, about 39.3% of our cases were assoicated with other cardiac anomalies with PDA.

In our study, 126 of 150 our patients (84%) with PDA were subjected to cardiac operation, 120 of 126 (80%) patients with PDA were closed surgically. 117 of them (78%) were closed by double ligature and transfixation in between and the remaining 3 (2%) patients by transection and - suturing. 2 of 126 (1.3%) patients were diagnosed as aortopulmonary window and were closed by divison of aortopulmonary window and repair of aorta and pulmonary artery. In 4 of 126 (2.6%) patients with PDA, the ductus remained open and not closed surgically.

Surgical correction of associated cardiac anomalies with PDA in our cases : Repair of ASD in 3 cases (2%) , right subclavian pulmonary anastomosis in one case (0.6%) , closure and repair of VSD in 20 cases (13.3%), complete surgical resection of coarctation of aorta and repair of aorta in 3 cases (2%), total correction of Fallot's

tetralogy in 2 cases (2.3%) and surgical repair of T.G.A. and pulmonary atresia in one case (0.6%).

After successful closure of the patent ductus whether by division or by suture ligation in the abscence of any other cardiac defects restitution to a physiologically normal state is complete.

One patient had complete heart block and required implantation of internal pacemaker.

One fatality was recorded after the operation and four fatalities before the operation.

In our series, there is a tendency for PDA to coexist with the following :

* Ventricular septal defect.
* Ventricular septal defect in congenital rubella syndrome.
* Coarctation of aorta.
* Down's sydnrome.
* Respiratory distress syndrome.

The indicence of various types of associated congenital cardiac anomalies with PDA in our children.

VSD (22.6%) , AI (2%), coarctation of aorta (3.3%), pulmonary atresia (4%), T.G.A. (3.3%), mitral atresia (0.6%), Fallot's tetralogy (2.6%), pulmonary stenosis (0.6%), patent foramen ovale (2%), ASD

(secundum type) (2.6%) ASD (ostium primum) (0.6%), complete A-V canal (0.6%) , aortopulmonary window (1.3%), congenital complete atrioventricular heart block (0.6%), hypoplastic left ventricle (1.3%) , single coronary artery (0.6%), Inferior vena cava to left atrium (0.6%), juxtaposition of the atrial appendages (0.6%),dextrocardia only (0.6%), congenital bicuspid aortic valve (0.6%), dextrocardia with situs inversus (0.6%), dextroversion (0.6%), and right coronary artery fistula communicating with the right ventricle out flow tract (0.6%), pulmonary arterivenous fistula (0.6%) and endocardial fibroelastosis (2%).

The incidence of various types of associated extracardiac anomalies with PDA in our children.

Congenital lobar emphysema (0.6%), Down's syndrome (0.6%), congenital rubella syndrome (0.6%) , respiratory distress syndrome (0.6%), haemolytic anaemia due to glucose 6-phosphate dehydrogenase enzyme (0.6%), bronchiectasis (0.6%), spina bifida (0.6%), Abnormal hand creases (10%) deafness (0.6%). Bilateral congenital cataract (1.3^%) and Sprengel shoulder (1.3%).

It has become the custom to submit PDA to surgery once it is clinically diagnosed without invasive investigations. Yet it is our experience especially in infancy and early childhood that many of the mimicking and concomitant lesions may be present silently along with ductus arteriosus.

As the presence of such lesions may prove detrimental to successful closure of the PDA without complications, so we can conclude that all cases of PDA must undergo cardiac catheterization and angiocardiograpby prior to surgery to detect other congenital cardiac defects which may be hidden by the machinary murmur of the PDA.