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RESEARCH ARTICLE

AUTOPSY STUDY OF SERIES OF TEN CASES OF CONGENITAL HEART DISEASE

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ABSTRACT

Autopsy study has helped modern medicine by establishing the cause of death, manner of death, comparing ante mortem amd postmortem findings and producing vital statistics. The present study was undertaken to know the spectrum of congenital heart disease in autopsy cases which has its importance in clinical care of patients. In this study, 10 cases of congenital heart disease were found in 270 autopsies having equal sex distribution. Maximum cases are of VSD (3 cases). Five cases died within 5 days of birth. Bronchopneumonia was the cause of death in 5 cases. Extra cardiac defect in the form of renal dysplasia was seen in only 1 case of patent ductus arteriosus. Two cases of congenital heart disease reached adult life. Improved health care system will facilitate early diagnosis of congenital heart disease which will lead to early medical and surgical interventions, thus, increasing the life expectancy of the patient.

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INTRODUCTION

Congenital heart diseases, which make up about 1% of human malformations, are among the most common malformations in fetuses. They contribute significantly to infant mortality rate due to poor prognosis. According to various epidemiological studies, the incidence of congenital heart disease is between 4 & 8 per 1000 live births (Tennstedt *et al.,* 1999). Congenital heart diseases are the most prevalent heart defects and require multiple hospitalizations and surgical procedures.

Aims and objectives

The purpose of the present study was to observe the spectrum of congenital heart disease in autopsy cases in Solapur district & surrounding areas.

MATERIALS AND METHODS

The present autopsy study was conducted in the department of Pathology in a tertiary care centre, over a period of one year. All autopsies (clinical as well as medicolegal) diagnosed as congenital heart disease carried out during the study period were included in the study. Detail clinical history regarding age, sex, cause of death was noted. Thorough morphological examination of heart was carried out.

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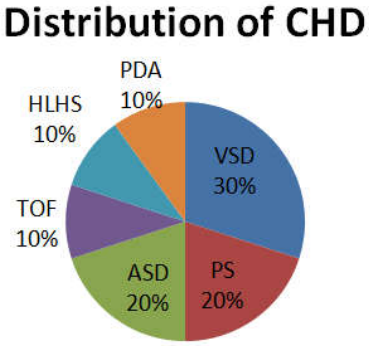
The diagnosis of congenital heart disease was confirmed and the case was included in the study. Consent was taken from ethical committee of the institute prior to commencement of study.

RESULTS

Total 270 autopsies were performed during the period of study. Congenital heart disease was present in ten cases.



Types and distribution of congenital malformations of heart in 10 autopsy cases

Hypoplastic left heart syndrome and Fallot's tetralogy were associated with complete atrioventricular septal defect (AVSD), & truncus arteriosus.Maximum cases were showing ventricular septal defect(fig1)followed by atrial septal defect (fig2).

Table 1. Age at death occurred in ten cases of congenital heart disease

Age	No. of cases	Percentage of cases
<1 day	3	30%
1 – 5 days	2	20%
4 months – 1 year	3	30%
5 years- 20 years	1	10%
20 years – 25 years	1	10%

Table 2. Causes of death in ten cases of congenital heart disease

Cause of death	No. of cases
Bronchopneumonia	5
Cardiac failure	4
Renal failure	1
Total	10

Table 3.

Lesion	NERCIP series1969-74 (n=900)	Bohemian study 1952-79 (n= 1090)	Asuquo U. Antia et al.,1974 (n=260)	C Tennstedt et al., 1999 (n=815)	Present study (n= 10)
VSD	2.9 %	21.9%	27%	28%	30%
PS	8.6%	7.8%	12.3%	3%	20%
ASD	1.4%	4.9%	14.2%	0.5%	20%
TOF	4.5%	7.3%	12.3%	3%	10%

VSD – Ventricular septal defect; PS – Pulmonary stenosis; ASD – Atrial septal defect; TOF – Tetralogy of Fallot

Fig. 1. Photograph showing ventricular septal defect as indicated by probe

Fig. 2. Photograph showing atrial septal defect as indicated by probe

Fig. 3. Photograph showing Isolated Infundibular pulmonary stenosis

There was equal sex distribution in the series of study (M: F = 1: 1)

Of the 10 cases of congenital heart disease majority (50%) died within 5 days of birth. Two deaths occurred in their early adult life (Table 1). The causes of death in 10 cases of congenital heart disease are summarized in Table 2. Bronchopnemonia and cardiac failure were the most common causes of death. Among the congenital heart malformations, extra cardiac defect (renal dysplasia) was present only in association with PDA.

DISCUSSION

The incidence of congenital heart disease in 270 cases presenting for autopsy during the period of this study was 2.7% (10 cases). Reinhold – Richter L, Fischer, 1987 reported the incidence of congenital heart disease to be 26.5% in their autopsy study (Reinhold *et al.,* 1987). On the other hand, C.

Tennstedt, Chaoui *et al.,* 1999 reported congenital heart disease in 16% of autopsies (Tennstedt *et al.,* 1999). The incidence of congenital heart disease according to different reports shows wide variation. Most of the reports base their observations on clinical grounds with very little autopsy material. In our present study, ventricular septal defect was the most common defect (30%). It occurred as an isolated lesion & also in association with Fallot's tetralogy. Ventricular septal defect has been reported to be the most frequent cardiac defect in various other autopsy studies. In our study the incidence of Fallot's tetralogy, patent ductus arteriosus and hypoplastic heart syndrome was 10% each. In a study by Asuquo Antia *et al.,* 1974 the incidence of Fallot's tetralogy and patent ductus arteriosus was 12.3% and 18% respectively (Asuquo, 1974). C. Tennstedt, Chaoui et *al.,* 1999 reported the incidence of hypoplastic heart syndrome to be 16% (Tennstedt *et al.,* 1999).

The sex distribution was equal in the overall series, in keeping with the findings by Keith et al., 1958; Schrire, 1963 (Asuquo, 1974). In our study 50% of deaths occurred within 5 days of birth, whereas 30% of deaths occurred between 4 months – 1 year of life. Majority of deaths occurred during the first year of life (80%). This compares closely with that reported by Reinhold – Richter L, Fischer A., 1987 (78.8%) (Reinhold *et al.,* 1987). In a study by Anita S Hegerty *et al*., 1985, it is estimated that one third to two third of children with congenital heart disease die within first year of life (Anita *et al.,* 1985). According to a study by Maurice Campbell, 1973, 17.7% of cases of ventricular septal defect survived beyond the age of 20 years (Maurice Campbell, 1973). Bronchopneumonia was the cause of death in 50% of cases followed by heart failure in 40%. A.U. Antia *et al.,* 1974 reported bronchopneumonia & cardiac failure in 29% & 8% cases respectively (Asuquo, 1974). In this study, most of the deaths (50%) in cases of congenital heart disease occurred in the perinatal period in which internal malformations were not suspected clinically. Thus, autopsy is an invaluable tool for detecting visceral malformations adding to the clinical diagnosis and counseling the parents for subsequent pregnancies. Knowledge of demographic variations of congenital heart disease may lead to new etiological insights & may be useful for preventive therapies. Socioeconomic status, education, urbanization, climatalogical factors, ethnicity, lifestyle & health care seeking behavior of the patient play a role in congenital heart disease incidence & mortality (Mulder, 2012).

Conclusion

As progress is made towards attaining WHO goal of reduction in child mortality to 31 per 1000 by 2016, it will only be achieved by concentrating on the burden of non communicable or neglected diseases. This work highlights the untreated cohort of children with congenital heart disease. Despite dramatic changes in medical techniques of investigations and treatment, many autopsies showed major pathological abnormalities which if recognized before death would lead to changes in management and longer survival of the patient. Efforts should be made for early diagnosis of congenital heart disease at a regional level along with provision for adequate & accessible cardiothoracic surgical services. If the prevalence of congenital heart disease is known, effective public health policies and preventive measures can be developed. This knowledge is essential to define the existence of a particular situation and to compare the characteristics with other population which can result in the definition of strategies to minimize damages.

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