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# STATISTICS OF CONGENITAL CARDIAC DISEASE 

(400 CASES ANALYZED)

MAUDE E. ABIBOTT, I.A., M.I)<br>

## keprimied trom


(Now Scrios, Vol, XiV., No, 1), pp, 77-91, Jıly, ico

BOSTON
MASSACHUSETTS
U.S.A.



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The subject of congenital cardiac disease is one that lemds itself well to statistical study，for the conditions，being often complex and of recognized ratity，are usually reperted in much detail．Moreover，the casces are so infrequent in any one person＇s experience that some such method as this，of making nse of the available literature must be adopted in order to arrive at any generalizations．

For anuther purpuse，I have haul occasion tumake a detailed statistical study of some four hundred and twelve cardiac defects．A few of these are drawn from personal experience， the remainder from the literature．Only well－authenticated cases with post－mortem report attached lave been inchoded． The only exception to this statement is formed by three cases included in the serics of patent ductus arteriosus diagnosed by characteristic physical signs and by the $\mathbb{X}$－Rays and not confirmed by post－mortem．The results of the analysis of four hundred of these cases are shown in the accompanying chart．This chart is presented here merely as a demonstrid－ tion of the manner in which these defects were studied，and withont any intention of entering at length into the figures． It represents a chart which was originally printed for the analysis of the individual defect，and is here modified in a few particulars to admit of the presentation of the total results obtained．

The chart presents four main divisions．The First Division includes the Classification of the defect．Number of cases analyzed，Age，and Sex．In the classification a simple anatomical order has been followed，based also on the

[^0]pri :iples of the acvelopmen' of the heart, so fis as these are known. Thins, defects of the cardiac and aortic septa are followed by transposition of the arterial trunks, due (according to Rokitansky) to a deviation of the atortic septum; and this arain by pulmonary and aortic stenosis or atresia (some cases of whicli are probably likewise due to a deviation of the aortic septumi). The cases of pulmonary and aortic stenosis or atresia are sub-classified (following Rauchfuss) according to the presence or absence of defects of the interauricular and interventricular septa, and this affords a clinical grouping of much value. In coarctation of the aorta the distinction driwn by lonnet " is ob,erved hetween the infantil: form, a simple persistence of the isthmiss aorta, and t'se typical "atalt tje j " of coarctation in which the aorta is obstructed or even obliterated by a sharp constriction att or above the insertion of the disctus.

Among the defects enumerated in this classification those of clinical importance are:

Defects of the interauricular sept:All, 2 K cases; defects of t., e interventricular septum, 40 cases: complete defects of the cardiac septa (biloculate heart, etc.), 12 cases; defects of the aortic septum, 14 cases; transposition of the arterial trunks, 84 cases; pulmonary stenosis, 75 cases; pulmonary atresia, 23 cases; tricıspid stenosis, 2 cases; tricuspid atresia, 9 cases; patent ductus arteriosiss, 23 cases; coarctation of the aurta, 33 cases; hypoplasia of the aorta, 2 cases. Under Age" are three columms in which the maximum, minimum, and mean ages of the cases in each gro up are calculated.

The Secon」 Division it the chart includes themp Postmortem Findings of especial importance in cardiac defects. Here are noted the condition of the fetal passages, whether closel or patent, the presence of hypoplasia or dilatation of the pulmonary artery or the aorta, the existence of a collateral circulation (important in coarctation of the aorta), the incidence of arterial disease, of acute endocarditis, and of

[^1]ehronic valublar disease, the presence of hypertropliy and dilatation of the different chimber of the leart, and lastls the exintence of associated anmmalies in the lient, vessels, or elsewhere.

The Third I vistan rote points of elinical iutcrest, wich as the presence of onditions having ins ctiological bearing on the family nistory, and in the persomal history the incidence of dhenmatism, pulmonary tuberenlusis, or congenital syphilis, and the proportion of caes recosering from the acute infections fevers (which cyan tic patients are s.ided to pass through well). Under special symptoms are culumns for cyanosis in its difierent degrees, clabbing of the fingers, dyspuea, dyspmeic attichs and delayed development. I'lyssical signs may be vascular or cardiac, and among the litter the occurrence of visible pulsation, precordial bulging, thrill, increised dulness, accentaition of the heart somnds, and the existence of murmurs, prespstolic, systolic, diastolic, continuous, suable (i.e., ws.stolic ant disastolic in rhythun), or indefinitely stited, are nuted. liinally, muder catnses of death we find the defect itself proving fatil sudedenly or by failing compensation, or a termination by broncho-pneumonia. cerebral complications or the achete infectious fevers.

The Fourth Division of the claart, that of Relative Freguency, s of the freatest importance, Cardiae anomalies are so ofien complicated that the number of times a given defect occurs alone or as the primary condition by no means represenis its total inciden: in the four hundreci cases. In this division there are, therefore, shree columins. In the first of these stands "the number of cases classified as the primary lesion," the fgures of which are identical wis' those at the beginning of the chart showing " the number of cases analyzed " in each group. Tie sum of the figures in this column is the four hundred cases analy\%ed. In the next column stands the number of cases in each group in which the defee uccurs complicating other conditions, and this with the number of cases classified as the primary lesion
gives the total incidence of the defect. whede is thes shown in the last colinmin of the chart.

The resilt of this analysis bring ont sonic remarkable facts, several of which are at variance with aceepted ide:is. The following points are of especial interest :

1. The fregnency of defects of the interventricular septum. - While relatively rare alone (thirty-two defects at the base among the fonr homired), in combination with nther conditions this is seen to be the mont common of all cardiac anomalies (one humdred and forty nime amonh the four hundred cases) : next infrequency conles patent foramen ovale, under which are incladed only cases uf trac patency, not simply a valvular or slit-like condition, with one hundred and thirty.funr cases, and then pittent ductns arteriosus with one hunifed and six. The frequency of transposition of the arterial trunks (forty-six cases) and of pulinonary stenosis with defect of the interventricular sejtum (seventy-three cases) is noteworthy, while pulmonary stenosis with closed interventricular sejtunn is relatively infrequent (seventeen cases).
2. The duration of life is seen to be relatively long in uncomplicated defects of the interanricular septum, patent dnctus arteriosus, coarctation of the aorta, and pulmonary stenosis with closed interventriculir septinn. In pulmonary stenosis with defect of this septom the duration of life is seen to be mush shorter.
3. Patency of the ductus arteriosus is seen to be rare in pulmonary stenosis, though very frequent in pmlmonary atresia.
4. The right chambers chicfly are hypertrophied and dilated in defects of the interamricular septum, tramsposition of the arterial tronks, pulmonary stenosis and atresia. Both chambers, but chiefly the right, are enlarged in defects of the interventricular septum and piatent ductus arteriosus, the left ventricle chicfly in coarctation of the aorta.
5. Acute endocarditis is seen to be relatively common in
$1$


## ITAL CARDIAC DISEASE

## NDINGS $\quad$ CLINICAL HISTORY


defects of the interventricular septum at the base and in pulmonary stenosis.
6. Cyanosis was absent in most of the defects of the interauricular septum and was not "marked " in any of these cases. A moderate degree of cyanosis was fairly common in defects of tle interventricular septum, a marked degree in only three cases. Marked cyanosis was seen clicfly in transposition of the arterial trunks, pulmonary stenosis with defect of the interventricular septum, pulmonary and tricuspid atresia. Cyanosis was usually slight or absent in patent ductus arteriosis and in coarctation of the aorta of the adult ty'pe. In six cases of defect of the interauricular and in four of defect of the interventricular septını, the cyanosis was "terminal," appcaring only in the last few weeks of life.
7. A thrill was frequent in "pure" defects of tle interventricular septum at the base, and in pulmonary stenosis with closed interventricular septum, or with defect of the interventricular septum and patent foramen ovale. A thrill was relatively rare in pulmonary stenosis with defect of the interventricular septum and closed foramen ovale.
8. In the great majority of cardiac defects the murnur, when present, was systolic in rhythm.
9. In some cases of pulmonary stenosis the pulmonary second sound was accentuated.

These are not all the conclısions to be drawn from a study of this analytical table; they are sufficient, however, to show the value of a careful and detailed tabulation of the data afforded by different observers in arriving at gencral deductions, such as could not legitimatcly be drawn from tlie facts in the experience of any single worker.

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[^0]:    －Fresented before the Association ot I athologists and Heteriologisis at Ann Aroor， Michı，Aprit 18, Igo8．Keceived for publication Mily $1,1908$.

[^1]:    - Bonnet, Revue de Médréine, 1g03.

[^2]:    The Jovrinal or Medicar, Ifenearcit, Vol. NIX., No. i, July, fums.

