Prevalence Of Various Types Of Heart Diseases In Kathmandu

— A Six Years Survey Of Admitted Cases —

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INTRODUCTION: When one considers the preventive aspect of diseases precise knowledge about the magnitude and nature of the problem becomes one of the major hinderances. Though many physicians practising in this region may have a rough idea of the incidence of various types of heart diseases coming to them for treatment we have not so far had a definite documented study. Moreover, the diseases may be undergoing significant modifications in their characters or in their frequencies with the passing of the time. Correlation of enviromental and other factors with the incidence of different types of heart diseases in different times may provide valuable clues to the epidemiology and thus help in the prevention. Hence, this brief study of various aetiological types of heart diseases, and their magnitude of prevalence in this region. This may help to make a base-line.

MATERIALS: In-patient records of 1788 heart disease cases admitted to the Bir Hospital, Kathmandu during 2026 to 2031 (Bikramaditya Sambat Years) were analysed.

OBSERVATIONS:

Total no. of cases studied..... 1788

Total no. of admissions on Medical side..... 12,315

Over all incidence of Heart Diseases..... 14.51 %
of all medical cases

The aetiologies of heart diseases for all the above mentioned years have been charted out separately showing the incidence, agegroups involved and the sex relationship, (Table I - VI).

The exact sex-ratio in each of the aetiological type of heart disease may be noted from Table VII.

Rise and fall of incidence of various types of heart diseases may be appreciated from the Table VIII showing overall incidence for separate years.

We have also tried to compare the different incidences in this region with the incidences reported from India and elsewhere (Table IX).

DISCUSSION: This study is expected to be of significant statistical value because of the considerable number of cases for a small town like ours, and also because the admissions in this hospital are from all the socioeconomic strata. Reviewing the study critically certain weaker points in this study may, however, be brought forward, like -

- (i) This study covers only the hospital cases. May be private patients form a significant bulk with different aetiological distributions but the inclusion of patients admitted in private and semiprivate rooms in the hospital will partially rectify this.
- (ii) Lack of highly specialised techniques like coronary angiography and echocardiography makes it difficult to come to an exact diagnosis in few problematical cases. Such a thing may especially be experienced in differentiating cardiomyopathy from coronary artery diseases. It should however be realised that even in centres with all the modern facilities genuine mistakes are occasionally made as proved by autopsies.

AGE INCIDENCE: Cor Pulmonale seems scattered in all the age groups. However the maximum incidence is seen after the fifth decade. Rheumatic Heart Disease has been most prevalent during the first three decades. Then it slowly declines. Ischaemic Heart Disease has been very rare during first three decades. Myocardial Infarction has however been diagnosed in three men of late-twenties. Only 50 cases were found between 31 and 50 years of age whereas after 50 years of age 92 cases have been found. Systemic Hypertension is also found in all the age groups; the incidence, however, has been increasing with age. Cardiomyopathy is also distributed in all the age groups. Congenital Heart Diseases have been diagnosed more frequently during first four decades. They have been relatively rare after the age of fifty.

SEX INCIDENCE: Cor Pulmonale, Rheumatic Heart Disease; and cardiomyopathy

have been more common in females (Table VII), Ischaemic Heart Disease is almost two and a half times more common in males than in females.

TABLE X

Incidence of Ischaemic Heart Disease shown with Age and Sex
Correlated:

	<u>10-30 years</u>	<u>31-50 years</u>	<u>Over 50 years</u>
No. of males.	3	31	69
No. of females:	0	19	23

Here it is interesting to note that the gap between the incidences in males and females instead of getting narrow after the age of 45-50 years has on the contrary to previous reports (Peel, 1955; Framingham report) widened. However even in the U.S. in recent years the incidences of coronary Heart Disease in women appears to have risen, even in the absence of overt diabetes or hypertension. The dominance of men suffering from coronary heart disease is not universal. In American Negroes the incidence in males and females is almost the same (Friedberg, 1966).

TABLE XI

Incidence of Myocardial Infarction alone with age and sex correlated:

	<u>10-30 years</u>	<u>31-50 years</u>	<u>Over 50 years</u>
No. of males:	3	16	32
No. of females:	0	8	11

This also shows the similar trend. But this finding is important from the fact that sex-ratio now is less than 1:3 whereas the ratio reported by one of us in 1960-68 series was 6.5 (M.R. Pandey, 70). Increasing use of oestrogen containing pills might be a factor for the increased incidence in females, especially in the relatively younger group.

DISCUSSIONS OF INCIDENCE OF INDIVIDUAL TYPES:--

(1) COR-PULMONALE - It forms the major bulk of cardiac cases in Kathmandu. The figure obtained here (46%) is much more than those reported from any other part of the world. Heilig (1953) has reported an incidence of 31.6% from Jaipur, India. But the same author has reported an incidence of only 18% from the same place in 1960 (Heilig and Mittal, 1960) Wood (1951) had estimated the incidence of Cor Pulmonale in England to be about 5 - 10% of all organic heart diseases. Vakil (1942 Bombay) reported an incidence of 30% of

all cases of cardiac failures. Datey et al reported 13% from Bombay (1965) Shanker (1968) reports 17.4% from Northern Mysore State. Padmavati's report from Delhi in 1933 has been 16.6%.

We have to have a good explanation for the relatively commoner incidence of Cor Pulmonale in younger patients in this series as compared to those reported by various authors from different parts of the world. More than 75% of cases from different series and at different times, (White and Jones - 1928; Spain and Handler - 1946; and Appenzeller and Benz - 1956) were over 50 years of age and a general statement is held that heart disease following chronic pulmonary lesions occurs mostly in old persons. In the present series the percentage distributions of Cor Pulmonale in different age groups have been :-

- i) 10 - 30 years 55 cases i.e. 6.68%.
- ii) 31 - 50 years 347 cases i.e. 42.15%.
- iii) Over 50 years 421 cases i.e. 51.17%.

High incidence in middle and elderly age groups has also been emphasized by Berry et al (1960) and Banerjee (1958). We feel that the following factors contribute to the very high prevalence of Cor Pulmonale in this part.

- i) Lot of cigarette - smoking contributing to chronic Bronchitis and emphysema.
- ii) Overcrowding along with damp and dingy surroundings predispose to repeated respiratory tract infections.
- iii) Frequent attacks of respiratory tract infections at short intervals in childhood may be one of the major risk-factors in the occurrence of Cor Pulmonale in early adult life. This process is more common in malnourished children dwelling in dingy and overcrowded rooms lacking ventilation and may explain the relatively high incidence of Cor Pulmonale even before the age of thirty.
- iv) People are exposed to a lot of fumes from wood and cowdung fires. Rooms are smoky and devoid of ventilation and chimneys in low socioeconomic groups.
- v) Situated away from sea at the height of 4,600 feet from the sea-level the difference in day and night temperature is quite marked, and the atmosphere is dry and dusty in the relatively long and severe winter season and also spring.
- vi) Some consideration must also be given to the constitutional and genetic factors. Certain enzymatic deficiency (antitrypsin-) running in the family may be the real risk and is worth investigating.

The discovery of anti-trypsin deficiency has attracted particular attention because of the early development of panacinar emphysema in subjects with this deficiency

and because this association carries important implications about the pathogenesis of emphysema in these patients (Pierce, et al, 1975). Talmo et al have reported a young man with no detectable antitrypsin in his serum and had a severe pulmonary obstructive disease. Study of his family disclosed numerous examples of normal M type protein in N/2 concentrations (Talno et al, 1973).

Investigation of AT can unravel the pathogenesis of chronic obstructive lung diseases and help the physicians in detecting a potential victim early in his life and protect him by not allowing him to be exposed to the predisposing factors like smoking etc.

(ii) RHEUMATIC HEART DISEASE:- Table VIII shows a fluctuating incidence of Rheumatic heart disease. After a maximum of 28.90% in 2026 it dropped to 19.33% in 2027. In 2028 it again rose up to 24.56% and then the falling incidence has now come down to 16.7% this year. The average incidence has been about 21.97%. In India the incidence of Rheumatic heart diseases has varied greatly in different places. Bombay is definitely experiencing a decline in its incidence.

- Shah (1960)... .. 28%.
- Datey et al (1965)... .. 22.5%.
- Samani et al (1965)... .. 20.8%.

Sepaha et al from Indore reported an incidence of 16.5% in 1965. But the incidence has been constantly high in South India: Sanjivi (1946 Madras)- 46.8%; P.S. Shankar (1968, Mysore)- 40.1%. Padmavati from Delhi has reported 39% in 1958. Among Mexican Indians the reported incidence is very high - 61.5% (Chavez, 1942, Mexico). Alimurung (1955) reports an incidence of 47.1% from Philippines.

The declining incidence in Kathmandu can be compared more or less with that of Bombay. More coincidence can not perhaps explain this. Improvement in the living conditions and the use of anti bacterial agents for upper respiratory tract infections in children may have contributed to this fall, as has been the case in certain other parts of the world (Wallace, 1955; Breese and Disney, 1955). Much, however, remains to be done if we compare our figure with those of the affluent countries. Keith has estimated the incidence in American, British and Canadian School children to be 0.9 - 1.36%, 0.1 - 2.08% and 0.36 to 3.92% respectively.

Apparently it would seem contradictory that similarly predisposed, the incidence of Cor Pulmonale is high and that of Rheumatic heart disease is declining. If we analyse

the age groups involved, we can see that the childhood of the patients now suffering from Cor Pulmonale was not as well protected by the antibacterial agents as that of those suffering from Rheumatic diseases.

(iii) ISCHAEMIC HEART DISEASE: - The figure (8.1%) is still on much lower side as compared to those reported from other parts of the world. The figures from India are as follows:-

Sanjivi (1946, Madras)...	13%
Vakil (1949, Bombay)	13.5%
Wig et al (1953, Amritsar)...	21.6%
Padmavati (1958, Delhi)...	11.3%
Devichand (1957, Simla)...	6.9%
Datey et al (1965, Bombay)...	14.9%
Shankar, P.S. (1968, Mysore) ...	10.9%

Wood from England has reported an incidence of 30% in 1953. White (1951-USA) has reported the figure of 48.5%.

Though the incidence is low it is gradually rising over these years. This is especially so with the non-infarctional type of ischaemic heart diseases. The possible explanations for such a rise are.

(1) Increasing Cigarette Consumption: Evidence from department of Statistics suggests that production in our own cigarettes factory has been steadily increasing over the last years. This could be one of the few definite factors in the increase in incidence of ischaemic heart disease.

(2) Less scope for Exercise; Over these years there has been steep rise in the number of public conveyances in Kathmandu. Increasing use of Buses, taxi-cars and private cars, and motor-bikes and scooters has lessened the daily average exercise hours of the city dwellers of Kathmandu. This could also very well be an explanation for increasing incidence of coronary heart disease in our population.

(3) Mental Stress and Strain: Though difficult to evaluate quantitatively modern man perhaps is hampered more with mental strain than before. Complexities of western life have, perhaps, been creeping into our society.

Few more factors which are worth studying in this connection are:

1. Trend of average serum cholesterol level in our population.
2. Change in the diet pattern in the form of cholesterol-content of an average diet.

and, 3. average body-weight - is it increasing ?

Relatively low incidence in Simla and Kathmandu may be because of the protective nature of hard water in these hilly places. Hard water is supposed to provide protection against ischamic heart diseases as postulated by Morris, Crawford and Heady.

IV. SYSTEMIC HYPERTENSION: Hypertension accounts for about 14.25% of all cardiac cases and forms the third important cause of heart disease, coming after Cor-Pulmonale and Rheumatic heart diseases. The figure is smaller in comparison to the reported incidence in India and Ceylon:

Amritsar (23.4%)	———	Malhotra (1951)
Delhi (32.4%)	-----	Padmavati (1958)
Bomby (18.3%)	———	Datey et al (1965)
Ceylon (50%)	-----	Gunewardene (1935)

It is however higher than that reported by P.S. Shankar (1968) from Northern Mysore state - 11.8%. But the figure is quite low in comparison to the reports from western countries.

Lenegre and Killardonis (1949 France)	--	51.8%
Wood, P (1956. England)	-----	65%

V. CARDIOMYOPATHIES: A total of 81 cases of cardiomyopathies have been diagnosed in the six years. With an incidence of 1.65% in 2026, its incidence now in 2031 has become 4.1%. The average incidence has come out to be 4.52% holding the fifth place in the series. The reason for the increasing incidence is undoubtedly partially due to increased awareness and interest in the condition but it seems that there has, also been some real increase in the incidence.

VI. CONGENITAL HEART DISEASE: The incidence 1.1% is rather low as compared to the reports from India and other parts of the world. Datey et al have reported an incidence of 6.5% (1965) from Bombay. P.S. Shankar reports 4.0% from Mysore state (1968). Padmavati's figure for Delhi is 4.8% (1958). Vakil from Bombay had reported an incidence of only 1.0% in 1946. It has been maintained that the incidence of congenital heart disease is increasing all over the world. The low incidence observed in this series is because of the existence of a separate paediatric hospital in town.

VII. CASES OF CONGESTIVE HEART FAILURE OF UNKNOWN ORIGIN: About 44 cases of cardiac failure of unknown cause have been seen in this series. Most of them probably fall into the category of cardiomyopathies, myocarditis- etc.

VIII. PERICARDITIS: (0.33%) has rather been rare inspite of a very high incidence of tuberculosis in this region

A word about syphilitic heart disease is important for its extremely low incidence in this series. This may just be reflecting the general trend all over the world of its rapid decline in recent years due to the discovery of Penicillin and the decline in the incidence of primary cases in 50's and early 60's. Only two cases were diagnosed leptic in the whole series - accounting for just 0.11%. A total of 4 cases of thyrotoxic heart disease were also included in the series.

SUMMARY AND CONCLUSION

1. Analysis of 1788 cases of heart diseases was done to determine the incidence of various aetiological types and their age and sex distributions.

2. Cor Pulmonale was found to be the one with the highest incidence (46.00%) to be followed by (i) Rheumatic Heart Disease (21.97%), (ii) Hypertension (14.25%), (iii) Ischaemic Heart Disease (8.1%), (iv) Cardiomyopathies (4.52%), and (v) Congenital heart disease (1.33%). Thyrotoxic and syphilitic heart diseases have been very rare (0.22% and 0.11% respectively). Remaining minority (3.5%) comprised of aetiotogically unclassified cases of supraventricular tachycardias, auricular fibrillation, congestive cardiac failure of unknown origin and few cases of myocarditis and pericarditis.

Incidence of Cor Pulmonale has been more or less constant at a very high level. There are definite risk factors for this among the general population as have been mentioned above. An improvement in living conditions and avoidance of overcrowding and facilities for ventilation are immediately warranted. Study of -LAT among the general population if we could launch it now, might prove advantageous for the future.

3. The incidence of Rheumatic Heart Disease seems to be declining.

4. Incidence of Ischaemic Heart Disease is rising slowly and steadily. The male to female ratio is coming down. Increasing and perhaps indiscriminate use of oestrogen containing pills may be responsible for increasing incidence in females especially in the younger age groups. Increasing consumption of cigarettes may be another important factor in the increasing incidence of ischaemic heart disease.

5. Over all incidence of heart disease has been more or less equal in both the sexes.

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