

Obesity and Associated Disabilities amongst Defence Service Aircrew

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Defence service aircrew, reporting to Institute of Aerospace Medicine, Bangalore for the period of five years (1984 to 1989) were evaluated for the assessment of obesity. Out of the total of 415 cases evaluated, 44 cases (10.6%) were found to be obese. Of these 44 obese cases, 11 had ECG abnormality, 6 impaired glucose tolerance (IGT), 10 Diabetes Mellitus (DM), 7 Hypertension (HT), 7 Ischaemic Heart Disease (IHD) and 3 other miscellaneous disabilities. All these cases were advised reduction of weight and followed up at three to six monthly interval. 5 cases of DM, 2 cases of HT and all the cases of ECG abnormality and IGT were upgraded to their full flying category after significant improvement in their respective disabilities following weight reduction.

Keywords : *Overweight, Diabetes Mellitus, Hypertension, ECG Abnormality*

Excess deposition of adipose tissue is obesity. The comparison of weight (adjusted to height) with that of mean derived from population studies can be taken as simple criterion for labelling obesity. A 10% increase above the ideal weight substantially increases the rate of morbidity and mortality. Obesity is one of the major causes of ill health. Directly or indirectly, it is responsible for many diseases and disabilities, especially Diabetes Mellitus (DM), Hypertension (HT), Ischaemic Heart Disease (IHD) and ECG abnormality^{1,2,3}. Obesity is the most prevalent metabolic disorder in affluent societies^{3,4}. It is an important contributory factor in the development of diabetes mellitus^{2,3,5}. It has been reported that 90% cases of maturity onset diabetes do not require any medication and impaired glucose tolerance (IGT) reverts back to normal with reduction of body weight and dietetic control⁵. Decrease in body weight has also been reported to effect decrease in systolic and diastolic blood pressure^{6,7,8,9}. Adequate reduction of body weight has been reported to reduce the severity of

IHD and revert back nonspecific ECG findings to normal^{6,10,11}.

This study was undertaken to detect the presence and degree of obesity in defence service aircrew reporting to IAM during 1984 to 1989 and to determine its role in associated diseases.

Material and Method

All defence service aircrew reporting to Institute of Aerospace Medicine, Bangalore for medical evaluation during the period 1984 to 1989 were subjected to (i) record of personal and family history with specific reference to obesity, (ii) general and systemic examination including body built, height, weight, (iii) routine urine, blood and relevant biochemical investigations including GTT, serum cholesterol and uric acid, (iv) radiological evaluations including X-ray chest PA and screening heart wherever necessary, (v) electrocardiographic recordings at rest and after DMT exercise, (vi) investigations including Stress test, Echocardiography wherever indicated, particularly in cases of nonspecific ECG changes and asymptomatic IHD and (vii) plain X-ray abdomen, Intravenous Urography and renal scan in cases with associated hypertension.

All the cases who were found to be overweight were followed up with advice to reduce weight by judicious diet restriction as well as graded exercise. These cases were reviewed at three to six monthly intervals with repeat clinical evaluations and investigations to note the progress.

Results and Discussion

Out of the total 415 Defence service aircrew evaluated during the period from 1984 to

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1989, 44 cases (10.6%) were found obese. They were in the age range of 28 to 52 years, though majority of them (30 cases) were in the age group of 38-47 years.

Out of the total 44 cases, 18 were overweight by 10-20% over their height matched ideal body weight, 15 cases were within 20-30% range and the rest 11 cases were overweight by 30% above their ideal body weight.

The clinical disability pattern of these obese cases is presented in Table I. All but 3 cases had cardiovascular disabilities and diabetes mellitus. These 3 had miscellaneous disability of surgical nature.

Table I : Disability Incidence in Obese Aircrew

Disabilities	Obese Aircrew (n = 44)	
	No	%
ECG abnormality	11	25.0
Impaired Glucose Tolerance (IGT)	6	13.6
Diabetes Mellitus (DM)	10	22.7
Hypertension (HT)	7	15.9
Ischaemic Heart Disease (IHD)	7	15.9
Miscellaneous	3	6.9

Final disposal of the cases is shown in Table II. All ECG abnormality and IGT cases, 5 out of 10 cases of DM and 2 out of 7 cases of HT were upgraded to full flying category within a period of two years. Though the majority of IHD cases showed adequate weight reduction, they were not upgraded to full flying category because of the progressive nature of the disease.

Table II : Disposal of Cases of Obesity

Disability	No	Final Disposal			
		Restricted Flying		Full Flying	
		No	%	No	%
ECG abnormality	11	—	—	11	100
IGT	6	—	—	6	100
DM	10	5	50	5	50
HT	7	5	71	2	28
IHD	7	7	100	—	—
Miscellaneous	3	—	—	3	100

Studies on obesity in flying personnel are not many. In 1984, Krishnamurthy⁴ reported that amongst obese service officers, 30% cases had diabetes mellitus, 25% had IHD and 15% had hypertension. The present study shows that significant percentages of obese Defence Service aircrew had ECG abnormality (25%), IGT (13.6%), DM (22.7%), HT (15.92%) and IHD (15.9%) reiterating the observation of association of obesity with clinical disabilities like ECG abnormality, IGT, DM, HT and IHD.

Significant percentage of cases including all of ECG abnormality and IGT, 5 out of 10 cases of DM and 2 out of 7 cases of HT showed improvement in their respective disabilities following weight reduction that helped the aircrew to return back to their flying duties.

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