TABLE III

Standard G.T.T. in 12 Subjects having abnormal response to GTT Before and After Treatment

Subject	Pre-treatment (Blood sugar values mgm%)				Post-treatment (Blood sugar values mgm%)			
	F	½ hr	1 hr	2 hrs	F	½ hr	1 hs	2 hrs
1	90	150	170	150	80	150	165	105
2	90	200	230	136	85	125	140	105
3	105	195	185	140	95	150	130	110
4	100	150	180	145	85	145	115	90
5	110	165	160	145	85	175	145	120
6	90	175	195	130	90	165	150	105
7	100	185	200	155	95	145	180	120
8	110	220	235	210	85	180	155	115
9	95	185	140	165	80	140	130	85
10	100	150	185	145	75	130	90	75
11	90	180	150	135	90	135	145	105
12	90	175	145	165	75	135	150	110

(*c*) The GTTs were completely normalised after treatment and excepting one case, all the subjects showed a normal response to steroid augmentation after treatment. Three subjects relapsed six, eight and eleven months after cessation of oral antidiabetic drugs. However, subsequently treatment was restarted and complete normalisation of GTTs resulted.

Subjects were followed up and remissions maintained for upto 24—36 months.

Three subjects during the course of treatment experienced hypoglycemic reactions. No other side or toxic effects of the drugs were observed in any of the cases.

Discussion

In the natural evolution of diabetes, progression or regression from one stage to the next have been observed by long term follow up studies by many workers [5, 6, 16, 17, & 18]. Whereas even overt stage of diabetes may regress to a state of pre-diabetes[17], rapid deterioration in carbohydrate tolerance from latent state to overt diabetes may occur in other individuals[8].

Remissions in the course of diabetes of recent origin by hypoglycemic sulfonamides have been reported in experimental and clinical studies [10,13,14,15]. Fajan and Conn [7] studied the effects of tolbutamide on carbohydrate tolerance of young people with mild diabetes mellitus and found significant improvement in thirteen of fifteen subjects. Wilansky and Hahn[21] reported that the use of oral phenformine for six weeks induced remissions in the carbohydrate intolerance of about fifty percent of latent diabetics for as long as three years. Stowers[20], used chlorpropamide in treatment of cases of chemical diabetes and found normalisation of carbohydrate intolerance in 77% of cases in a period of 3½ years.

The beta-cytotropic action of sulfonylurea compounds has been clearly demonstrated in experimental animals [14,15]. Evidence of fasting and post-prandial hypoglycemia in our subjects treated with Tolbutamide suggests increased insulin secretion as a mode of action possibly consequent to β-cell hyperplasia. In certain cases of mild diabetics there is evidence of delay in insulin production rather than its absolute deficiency. The sulfonylurea in this setting may act to resynchronise this response[1]. Phenformin on the other hand increases peripheral glucose utilisation and reduces excessive insulin response in obese diabetics. In our subjects, a combined treatment with both tolbutamide and phenformin for an average duration of 5 months (range 3–12 months) reverted the carbohydrate intolerance in all excepting three cases who relapsed after cessation of treatment. However, resumption of treatment with hypogly-

cemic drugs resulted in normalisation of glucose intolerance.

Aircrew whose diabetic state is controlled by the use of anti-diabetic drugs are not considered fit for flying duties because of the danger of sudden incapacitation that may occur due to hypoglycemia in response to overaction of hypoglycemic drugs. The need for early recognition of the derangement in the carbohydrate metabolism amongst aircrew is important if the yield of pilot salvage after diagnosis is to be increased[1]. Since the course of mild diabetes can be reversed by vigorous treatment, it is worthwhile treating with these drugs together with dietary measures with a view to effect remission and to maintain the remission by continued dietary control, weight reduction, regular physical exercises and a more regulated living. Normalisation of carbohydrate intolerance to prevent the development of subsequent vascular disease[12], in cases of chemical diabetes, further supports the contention that these mild diabetics should be treated early enough and studies by Keen et all[12] are very encouraging in this regard.

Recommendation

Routine periodical examination of all aircrew should include measures for early detection of diabetes so that early treatment may reverse the course of mild diabetes, thus keeping the aircrew flying fit and conserving man-hours.

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