Gender differences in metabolic control and complication rates in a cohort of type 2 diabetic patients from Central America

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Abstract

Objectives: to compare metabolic control and complications rates between men and women in a cohort of type 2 diabetics from Central America.

Materials and methods: retrospective cohort that included T2DM diagnosed between 2004-2009 and has been in control with a private endocrinologist during 2009-2014.

Results: 253 patients from Costa Rica, El Salvador, Honduras and Guatemala. 139 (54.3%) male. Average age 52.58 years in males (M) and 53.79 in females (F) (p=0.438). There was no difference in time since diagnosis or BMI. During the 5 years of follow up, there was no difference in Hba1c, blood pressure, number of patients with Hba1c <7% or BP <140/90 mm Hg. There was no difference in average LDL up to 2012, but in 2013 (98 mg/dl (M) vs 87 mg/dl (F), p=0.06) and 2014 (97 (M) vs 86 (F), p=.05) there was a trend toward lower LDL in (F). This was reflected in a higher percentage of patients that achieved LDL <100 mg/dl during 2013 (60.7 (M) vs 83.3 (F), p=.024) and 2014 (57.9 (M) vs 86 (F) p=0.004). There was no difference in incidence of microvascular complications. There was a higher number of coronary disease although NS (7.2% (M) vs 1.8% (F) p=0.071). Hypoglycemia rate was 15.1% (M) vs 22.8% (F) (p=0.144).

Conclusions: More female patients achieved a target of LDL <100 mg/dl during 2013 and 2014. Otherwise, there was no difference in metabolic control or complication rates between genders.

Introduction

There is a worldwide increase in type 2 diabetes incidence including Central America. As diabetes becomes more prevalent, there will also be more patients with cardiovascular disease and other complications. It has been reported that diabetic women have a threefold increase in the risk of cardiovascular mortality compared to a twofold increase in diabetic men[(1)]. A poorer control of cardiovascular risk factors is believed to be a possible explanation for this difference.

We have no data regarding complication incidence rates in Central American diabetic patients nor metabolic control parameters.

The objective of the present study is to compare metabolic control and complications rates between men and women in a cohort of type 2 diabetics from Central America.

Materials and Methods

This is a retrospective cohort that included T2DM diagnosed between 2004-2009 and has been in control with a private endocrinologist during 2009-2014 in Costa Rica, El Salvador, Guatemala and Honduras. Clinical charts were reviewed and demographic variables, metabolic control (lipids, Hba1c, renal function) were collected anonymously. Microvascular and cardiovascular complication were defined by the treating physician.

Local ethic committee approval was obtained in those countries and centers where it was mandatory.

Statistical analysis was performed using SPSS 20.0.

Results

253 patients were included from 2 centers in Costa Rica (n=57), 3 centers in El Salvador (n=74), 2 centers in Guatemala (76), 1 center in Honduras (n=46). 54.9% were males. Baseline characteristics are shown in table 1.

Table 1. Baseline characteristics.

Characteristic	Male N=139	Female N=114	P
Age (years)	52.58	53.79	0.438
BMI	29.16	29.35	0.792
Years since diagnosis	1.27	1.35	0.680

Figure 1. Percentage of patients achieving Hba1c <7% by gender

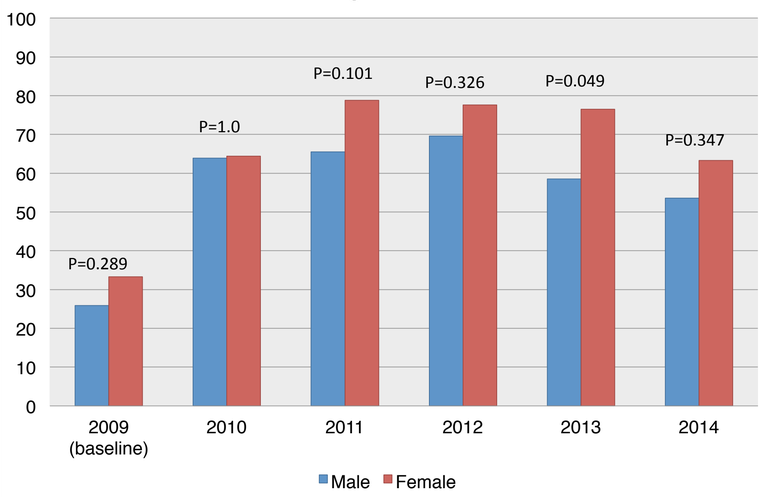


Figure 3. Percentage of patients achieving LDL <100 mg/dl by gender

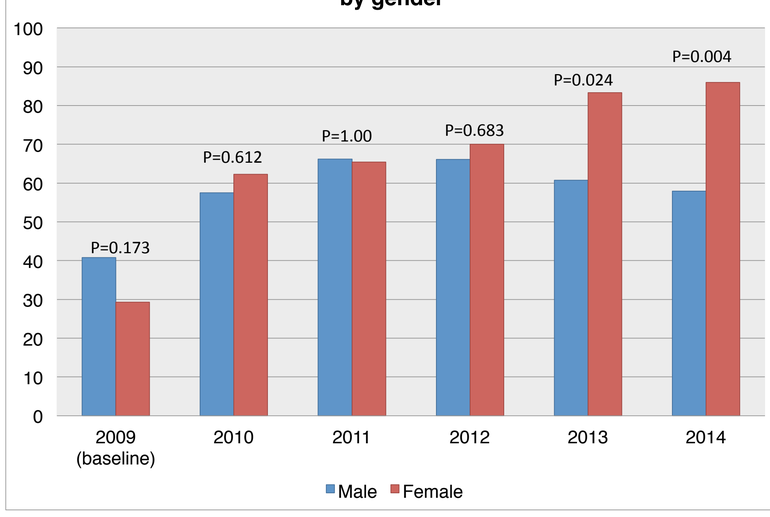
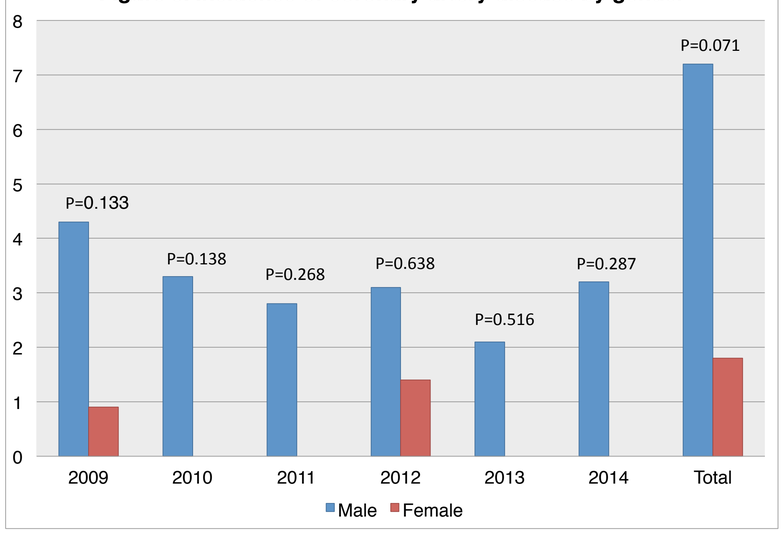


Table 2. Percentage of patients with blood pressure <140/90 mm Hg

Year	Male		Female	
	SBP	DBP	SBP	DBP
2009 (baseline)	82.8	91.8	81.2	96.4
2010	95.8	98.3	93.1	97.7
2011	95.7	96.7	92.6	95.6
2012	94.6	97.3	93.2	100
2013	96	98.7	94.3	98.1
2014	94.6	98.6	93.8	97.9

Figure 3. Incidence of coronary artery disease by gender



Overall microvascular complication rates were low and there were no gender differences. During the 5 year follow up, 15.1% of male patients had hypoglycemia compared to 22.8% of females (p=0.144).

Discussion

This is the first report of a Central American type 2 diabetic patients cohort. Overall, glucose and blood pressure control were very good and were comparable between genders. Initially LDL levels targets were similar between genders during the first 3 years of follow up, but during the last 2 years, more female patients reached LDL targets of less than 100 mg/dl. There was a trend toward a higher incidence of coronary disease in male patients. This has several explanations. First of all, it may due to higher LDL levels in males. However, the difference in trends of CAD were apparent right from the start, when LDL levels were comparable in both groups. Second, younger female patients will have a lower CAD incidence rates. Despite having a similar age, we included a young population and there should be a significant proportion of female patients that were pre or peri menopausal (data not collected).

Hendriks et al[(1)] described a similar trend in LDL levels in Netherlands. They showed that despite a better control in recent years, average total cholesterol/HDL ratio was higher in males compared to females. They also showed a higher prevalence of smoking, albuminuria and BMI in male patients, all of which may account for a higher prevalence of coronary artery disease.

Other reports[(2,3)] have shown in cross sectional studies a worse control in cardiovascular risk factors in women but a lower cardiovascular event rate. In our cohort, initial LDL levels were higher in women but during follow up, its control improved and became even better than males. We think that in the present study, treating physicians try to achieve a good metabolic control regardless of gender and that is why at the end cardiovascular risk factors were better controlled in women.

Conclusions

In general, metabolic control as measured by Hba1c and blood pressure was good. More female patients achieved a target of LDL <100 mg/dl during 2013 and 2014. Otherwise, there was no difference in metabolic control or complication rates between genders. There was a trend toward a higher coronary artery disease incidence rate in males although not significant.

References

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