

Full Length Research Paper

Profile of blood pressure and glycemic figures of obese people in the common of tchamba (Togo)

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Investigate the profile of blood pressure and blood sugar figures of obese people in the municipality of Tchamba. We conducted a cross-study examining the obese population Tchamba Municipality during the period 20 October to 20 December 2011. Female has characterized our sample with a sex ratio F/H equal to 2.46. The age range of 46 to 60 years was the most represented (35%). Considering the BMI, obesity was mild in 50% of subjects; average at 34.44% and severe in 15.55% of the subjects. Considering the WC / HC ratio, obesity was observed android kind in 30% of our subjects, gynecoid kind in 38.88% and mixed in 31.11% in subjects of our study. The association with HBP and diabetes has been observed among our subjects and 58.88% of persons had presented figures fasting glycemic located within the normal range and the other 41.11% had high numbers. This study observed a trend to elevation of blood pressure and blood sugar with obesity. Indeed, progressive parallelism was noted between obesity and blood pressure first, and secondly, between the glycemic figures and obesity.

Keywords: Obesity, glycemy, blood pressure, cardiovascular risk, non-commutable diseases, Togo.

INTRODUCTION

Human obesity, recognized as a disease of affluent populations in 1997 by the World Health Organization (WHO), is today considered as a pandemic by the latter. According to its 2005 estimates, there were about (OMS, 1997a):

1.6 billion adults (aged over 15) and at least 20 million children under five years are overweight (BMI ≥ 25 kg / m²) at least 400 million obese adults (BMI ≥ 30 kg / m²) The WHO estimates that by 2015, approximately 2.3 billion adults will be overweight and 700 million will be obese (OMS, 1997). This is alarming because obesity

involves the onset of many chronic diseases including diabetes and high blood pressure which are responsible for the decrease in life expectancy in patients with morbid obesity. Studies have shown that mortality increases when BMI ≥ 25 kg / m² and life expectancy decreases the more that this index is high (Joste et al., 1987). Therefore overweight has become a major public health problem. The main causes of the increase in overweight and obesity rates in the world are sedentary lifestyle and a diet high in calories and fat (Prospective studies collaboration, 2009).

The impact of obesity on health include increased risk of sudden death due to coronary heart disease, cardiovascular disease, hypertension, stroke, non-insulin dependent diabetes and certain forms of cancer (Delpeuch and Maire, 1997).

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Interest in obesity in the South may seem paradoxical, while malnutrition of young children and micronutrient deficiencies affect a large part of the population and hamper the development of these countries by altering capabilities learning. Yet there are signs that overweight and obesity have already an impact on the development of these countries (Delpeuch and Maire, 1997).

In Togo, made a few studies have addressed this issue of obesity, including: risk factors of overweight in 1991 (Amédomé A, university of Lomé, Togo, short communication), the prevalence of hypertension among Togolese children in relation to obesity in 1992 (Dorkenoo KA, University of Lomé, Togo, Short communication), obesity and rheumatic diseases at the University Hospital of Lome -Tokoin in 2003 (Habada K, university of Lomé, Togo, short communication).

All these studies have had to frame an urban area, the capital Lome, a study in rural or semi-urban areas has proved so useful. The general objective of this study was to investigate the profile of blood pressure and blood sugar figures of obese people in the municipality of Tchamba.

MATERIALS AND METHODS

Our study was to frame the Prefectural Hospital Tchamba Type II hospital located at Tchamba, City of Togo, Central region located 35 Km east of Sokode, Chief town of region (Atlas de l'Afrique, 2000; Atlas du Togo, 1981). He acted in a cross-study examining the obese population Tchamba Municipality during the period 20 October to 20 December 2011.

The subjects included in the study were patients at the hospital companions, in which the body mass index (BMI) $\geq 30 \text{ kg} / \text{m}^2$, and has consented to the survey.

After obtaining consent to these subjects, anthropometric measures were taken, blood pressure and blood glucose levels were measured and plotted on a semi-structured preconceived support. The collected data was compiled and analyzed using Epi info and Excel 2007 7.1.5.2.

The weight was taken using scales in a subject only keeping the slip by standing on the apparatus. The size was measured with a measuring rod in a barefoot subject. Body mass index or Quetelet index (WHO Technical Report Series 854, 1995) was obtained by the ratio $\text{weight (kg)} / [\text{Height (m)}]^2$. Waist circumference and hip circumference were systematically taken in patients meeting the inclusion criteria. The waist circumference measure abdominal circumference at the umbilicus and hip circumference is measured at the widest level between waist and upper thighs, the tape horizontally.

Blood pressure was measured at both arms, by means of a sphygmomanometer and stethoscope on an elongate subject after at least 15 minutes of rest.

Blood glucose was measured using the spectrophotometer of the CHP Tchamba laboratory after blood samples taken from fasting subjects.

The standards used were those of WHO:

Anthropometric measurements (Rolland-Cachera et al., 1991):

Waist circumference (WC) is considered normal when it is below 102 cm in men and 88 cm in women. When it exceeds these figures, it is in excess and there is talk of abdominal obesity.

A hip circumference (HC) less than 110 cm for men and 120 cm for women is considered normal. It is in excess if it is greater than these values.

Obesity has been classified according to two parameters: the body mass index and waist circumference compared to hip circumference (WC / HC).

According to the BMI, obesity was considered as follows: lightweight ($30 \text{ kg}/\text{m}^2 \leq \text{IMC} \leq 34.99 \text{ kg}/\text{m}^2$), medium ($35 \text{ kg}/\text{m}^2 \text{ BMI} \leq 39.99 \text{ kg}/\text{m}^2$), and severe ($\text{BMI} \geq 40 \text{ kg}/\text{m}^2$).

According to the WC / HC report: when this ratio is less than 0.85 in women and 1 in humans, we consider that obesity is gynecoid; by against when it is higher or equal to these values, the obesity is android called. But, if this ratio is less than 0.85 in women and 1 in humans and that waist circumference is above normal, obesity is considered mixed. Blood pressure: a BP $\geq 140/90 \text{ mm Hg}$ is considered higher than normal blood pressure. Since only one measure cannot enable a finding of hypertension, subjects with such blood pressure were invited for control to the morning of the following days the first shot before possibly classifying hypertension.

Blood glucose: it was considered normal when the values were between $0.70 \text{ g} / \text{l}$ and $1.10 \text{ g} / \text{l}$, depending on the specifications of the spectrophotometer used.

RESULTS

A total of 90 subjects were selected for our study.

Socio-demographic characteristics

Female has characterized our sample with a sex ratio F/H equal to 2.46. The age of the subjects ranged from 22 to 60 years and the range 46 to 60 years was the most represented (35%). The most common occupation was that of merchant (52.20%) and housewives (21.10%).

Frequency of obesity by type

Considering the BMI, of the 90 subjects in our sample, obesity was mild in 50% of subjects; average at 34.44% and severe in 15.55% of the subjects.

Considering the WC / HC ratio, obesity was observed android kind in 30% of our subjects, gynecoid kind in 38.88% and mixed in 31.11% in subjects of our study.

Relationship between type of obesity and blood pressure

Among our 90 subjects, 18.89% had normal blood pressure, 63.33% had presented mild hypertension and 17.78% had moderate to severe hypertension. According to the BMI, the distribution of subjects according

Table I. Distribution of subjects by BMI and blood pressure.

Obesity type (BMI)	normal BP	Mild HBP	Moderate to severe HBP
Mild obesity (N=45)	31,11	64,44	4,44
Average obesity (N=31)	9,68	77,42	12,90
Severe obesity (N=14)	0,00	28,57	71,43

Table II: Distribution of subjects by the WC/HC ratio and blood pressure

Obesity type (WC/HC)	normal BP	Mild HBP	Moderate to severe HBP
Android obesity (N=27)	7,41	59,26	33,33
Gynoid obesity (N=35)	22,86	68,57	8,57
Mixed obesity (N=28)	25,00	60,71	14,29

to blood pressure is presented in the following table (Table I):

According to the WC/HC ratio, the distribution of subjects according to type of obesity and blood pressure is shown in Table II :

Relationship between type of obesity and glycemic figures

Of the 90 subjects in our study, 58.88% had presented figures fasting glycemic located within the normal range and the other 41.11% had high numbers.

Tables III and IV following, show the distribution of the subjects in our sample according to their blood pressure and BMI respectively according to the report WC /HC:

DISCUSSION

A female obesity was observed in our study. This trend of obesity, recognized by the WHO (OMS,1997) (14.6% of men against 22.8% in women) had been found in Africa by Dominique (2012) in Kinshasa, Democratic Republic of Congo, Capelli (2001) in Brazil, Mokhtar (2001) in Morocco, and France by Macia (2007). Indeed, the tendency to obesity in women may be explained by the existence of maternity factor mentioned in the study Basedevant et al. (1993) and the existence of trophic

determinants with a very rich and starchy diet suggested by Ngongang and al. (1988). One might add that, Tchamba being a strongly Islamic area of cultivation and trade as main activity, women are less interested in the sport and spend more time sitting in front of their retail displays.

Nearly 80% of our study subjects had high blood pressure (63.33% with mild hypertension and 17.78% with moderate to severe hypertension) and our study found a gradual alignment of the elevation of blood pressure and the BMI. Indeed, obesity predisposes individuals to several cardiovascular risk factors, including hypertension and high blood cholesterol. Hubert et al. (1983) estimated that there is an association between hypertension and obesity and hypertension is attributable to obesity in 30 to 65% of cases in the West. These authors also showed that blood pressure increases with BMI (Hubert, 1983) : for any increase in weight of 10 kg, blood pressure rises 2-3 mm Hg; conversely weight loss causes a drop in blood pressure. Thus, according to these authors, for each 1% reduction in body weight, voltage drop of 1-2 mm Hg. There is indeed a strong statistical correlation between the level of blood pressure and body fat percentage. Hypertension is 3 times more common in obese than in normal population and 50% of hypertensive patients are obese (Bleynaud, 1994). These results are consistent with the fact that

Table III: Distribution of subjects by BMI and blood glucose figures

Type of obesity (BMI)	Normal glycemia	High glycemia
Mild obesity (N=45)	71,11	28,89
Average obesity (N=31)	51,61	48,39
Severe obesity (N=14)	35,71	64,29

Table IV: Distribution of subjects by the TT / TH report numbers and glycemie

Type of obesity (WC/HC)	Normal glycemia	High glycemia
Android obesity (N=27)	74,07	25,93
Gynoid obesity (N=35)	65,71	34,29
Mixed obesity (N=28)	35,71	64,29

obesity is classified as the third most powerful predictor of cardiovascular diseases after age and blood pressure (Hubert, 1983).

The subjects including obesity was kind of android had a greater tendency to higher blood pressure. Obesity android that characterizes the male obesity is dangerous. It is kind of hypertrophic and causes metabolic complications and more health risks in the long term.

Our results have observed a tendency to hyperglycemia with increasing BMI. Indeed, it was observed that a large majority (64.29%) patients with severe type of obesity had high blood glucose numbers. These results correspond to the general finding that obesity is associated with insulin resistance. Indeed (Sinha and Caro, 1998) in their study of leptin, have shown that obesity is a major risk factor for non insulin dependant diabetes. Wajchenberg et al. (1994) and Björntrop (1997) believe that abdominal fat seems to be the risk factor for non insulin dependant diabetes, because abdominal fat has a higher metabolic activity than fat tissue under the skin and seems more resistant to the antilipolytic action of insulin. Basedevant et al. (1993) found a prevalence of hyperglycemia in obese people compared to non-obese and have concluded that there is an evolutionary parallelism between weight gain and diabetes risk. This is explained by the fact that hypertriglyceridemia causes an accumulation of fat in non-adipose tissue including pancreatic beta cells and results in several abnormalities in insulin secretion (Oakes et al., 1997). In addition, overeating skeletal muscle fatty acid is also associated with insulin resistance [Oakes et al., 1997; Shimabukuro et al., 1998).

Of all diseases associated with obesity, type II diabetes, is one that has the closest links with obesity and overweight (Parillo ,2004). Indeed, the risk of type II diabetes increases with BMI, already well below the values for obesity (BMI equal 30). Obese women are thus twelve times more likely to develop the disease than women in weight balance (Oakes et al., 1997).

CONCLUSION

This study observed a trend to elevation of blood pressure and blood sugar with obesity. Indeed, progressive parallelism was noted between obesity and blood pressure first, and secondly, between the glycemie figures and obesity.

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