IJC Metabolic & Endocrine 7 (2015) 25–30

Contents lists available at ScienceDirect

IJC Metabolic & Endocrine

journal homepage: http://www.journals.elsevier.com/ijc-metabolic-and-endocrine

Outcomes after hypertensive crisis: Comparison between diabetics and nondiabetics

Rashed Al Bannay [a,*], Aysha Husain [b], Michael Böhm [c], Stefan Wagenpfeil [d]

[a] Cardiology unit, Internal Medicine Department, Salmaniya Medical Complex, Internal Medicine Department, Arabian Gulf University, Bahrain
[b] Heart Center, King Faisal Hospital and Research center, Riyadh, Saudi Arabia
[c] Klinik für Innere Medizin III, Universitätsklinikum des Saarlandes, DE-66424 Homburg, Germany
[d] Institut für Medizinische Biometrie, Epidemiologie und Medizinische Informatik, Universitätsklinikum des Saarlandes, D-66421 Homburg, Germany

ARTICLE INFO

Article history:
Received 27 July 2014
Received in revised form 12 December 2014
Accepted 4 March 2015
Available online 14 March 2015

Keywords:
Hypertensive crisis
Hypertensive urgency
Hypertensive emergency
Diabetes mellitus
Hypertensive left ventricular failure

ABSTRACT

To study the long-term cardiovascular and non-cardiovascular outcomes among patients admitted with hypertensive crisis. A total of 297 (145 diabetics, 152 nondiabetics) patients with hypertensive crisis were followed up for a median of 30 months. Fatal and nonfatal events were tracked. The traced events defined as hypertensive urgency, acute coronary syndrome, left ventricular failure, atrial fibrillation, cerebrovascular or renal failure were consecutively analyzed during the follow-up.Overall, 140 (47%) patients had nonfatal clinical events (115 diabetics and 25 nondiabetics); 37 (12%) patients had fatal clinical events (26 diabetics and 11 nondiabetics). The rate of fatal and nonfatal events was significantly higher in diabetics. The mean time of survival was 25.7 months, with the shortest periods for stroke and left ventricular failure. For nondiabetic participants, the mean time of survival was 31 months. Cox regression analysis identified diabetes mellitus, acute left ventricular failure, stroke and renal impairment as predictors of mortality. In conclusion, hypertensive crisis is associated with a markedly increased risk for subsequent cardiovascular morbidity and mortality, especially among diabetics who present with heart failure.
© 2015 The Authors. Published by Elsevier Ireland Ltd. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

1. Introduction

Hypertensive crisis is defined as acute marked elevation of blood pressure, SBP ≥ 180 mm Hg and/or DBP ≥ 120 mm Hg. Hypertensive emergency is diagnosed, when there is acute target damage and hypertensive urgency when the latter is absent [1,2]. Previously we studied the behavior of hypertensive crisis in our community [3–6]. The clinical presentation of hypertensive crisis between diabetics and nondiabetics was compared [4]. Patients with diabetes exhibited higher rates of hypertensive emergency, particularly, left ventricular failure [4]. There is little if any knowledge of whether the prognoses and outcomes of hypertensive crisis differ between diabetics and nondiabetics. In this study, we aimed to discover the clinical outcomes of hypertensive crisis in both diabetics and nondiabetics beyond their initial clinical presentation.

2. Methods

All patients age above 18 years, visited the accident and emergency department with hypertensive crisis for a period of 6 months, from 1st June 2010 till 31st December 2010 were consecutively included. Patients with end stage renal failure requiring renal replacement therapy were excluded. Data on 297 patients were collected, 145 patients were diabetics, and 152 were nondiabetics. The initial comparison of their modes of presentation, types of hypertensive crises and associated comorbidities were published earlier [4].

These patients were followed for a period of 32 months from their initial presentation. Cardiovascular and cerebrovascular events requiring admission, development or worsening of renal failure requiring admission and commencement of renal replacement therapy were tracked using electronic data records along with chart retrieval.

Mortality was documented based on electronic medical records and patient death certificates. Causes of death were retrieved from the official death certificates. To validate the status of patients who were lost during follow-up, phone calls at the time of data collection were made to gather meticulous information regarding admissions and deaths. The time from the initial hypertensive crisis presentation until the occurrence of each event was documented.

* Corresponding author at: Cardiology unit, Internal medicine department, Salmaniya Medical Complex, P.O box 12, Manama, Bahrain. Tel.: + 083 39669406; fax.: + 973 17251303.
E-mail address: abdullarashed@yahoo.com (R. Al Bannay).

http://dx.doi.org/10.1016/j.ijcme.2015.03.003
2214-7624/© 2015 The Authors. Published by Elsevier Ireland Ltd. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

Hypertensive crisis was defined based on the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC 7) and the latest guidelines of the European Society of Hypertension (ESH) guidelines of systolic blood pressure ≥180 mm Hg and diastolic blood pressure of ≥120 mm Hg. The presence or absence of acute target organ damage was the basis for defining hypertensive emergency versus urgency, respectively [1,2]. A patient was considered to have diabetes if two readings of fasting blood glucose, taken on separate occasions, exceeded 7 mmol/L, if symptoms of diabetes occurred with casual plasma glucose concentration ≥200 mg/dl (11.1 mmol/L), or if the 2-hour post-load glucose level was ≥200 mg/dl (11.1 mmol/L) during an oral glucose tolerance test (OGTT) [7]. Dyslipidemia (hypercholesterolemia) was diagnosed if the total cholesterol level exceeded 200 mg/dl [8]. Acute stroke was defined if the patient was admitted to the hospital because of neurological deficits for more than 24 h and the radiology imaging of the brain revealed an ischemic or hemorrhagic area [9]. The definition of acute coronary syndrome was based on typical chest pain with electrocardiogram (ECG) changes with or without elevated cardiac enzymes. We involved patients with unstable angina, non-ST-elevation myocardial infarction (NSTEMI) and ST-elevation myocardial infarction (STEMI) [10–12]. Left ventricular failure was defined according to the Framingham criteria. The presence of two major criteria or one major and two minor criteria was satisfactory for diagnosing left ventricular failure or congestive heart failure [13]. Chronic renal impairment was diagnosed when the estimated glomerular filtration rate (GFR) was <60 ml/min/1.73 m^2 [14]. Acute renal failure and worsening kidney function were validated using the RIFLE criteria for acute kidney injury [15]. Patients were also included in the study if they had been admitted to commence renal replacement therapy with either hemodialysis or peritoneal dialysis at follow-up. New-onset atrial fibrillation requiring admission was validated by comparing the ECG conducted during the admission with the patient's most recent ECG. Fast and slow atrial fibrillation ventricular rates were included.

3. Statistical analysis

Quantitative data are presented as mean and standard deviation or median and range. Categorical variables are given as absolute (counts) and relative frequencies (percentage). For univariate comparison of continuous variables, a t-test for two independent samples or Mann–Whitney U-test was used. For univariate comparison of categorical data χ^2 tests were utilized. Mean survival times were calculated and compared between diabetic and nondiabetic patients. Survival analyses are due to Kaplan–Meier and log-rank tests. Hazard ratios and respective 95% confidence intervals were calculated using Cox regression. In univariate survival analyses the following variables were included: presence or absence of diabetes mellitus, age, sex, nationality, systolic blood pressure, diastolic blood pressure, pulse pressure, type of the hypertensive crisis, smoking, renal impairment, alcohol consumption and ejection fraction. If statistically significant in the univariate analysis, variables were included in an additional multiple Cox regression to account for possible confounding. Mortality was the dependent variable and the independent variables were diabetes, nationality, type of crisis, and renal impairment. Data processing was performed with MS Excel 2007 for Windows and IBM SPSS 20 for Windows. P values are two-sided and subject to a significance level of 0.05.

4. Results

The demographic data, comorbid conditions, blood pressure at initial presentation, type of hypertensive crisis and mortality are shown in (Table 1). Out of the 297 patients who presented with hypertensive crisis, 145 were diabetics and 152 were nondiabetics. Diabetics were older than 65 years of age and most were Bahrain citizens. Those younger than 45 years were mainly nondiabetics. The median follow-up was 30 months for nondiabetics [1–32] and 24 for diabetics (0–28)

Table 1
Characteristics of 297 patients included, among two groups.

Characteristic	Non-diabetics (n = 152)	Diabetics (n = 145)	P value
Demography			
Female sex [no.] (%)	49 (32.2)	60 (41.4)	0.10
Age [no.] (%)			<**0.01**
<45	49 (32.2)	10 (6.9)	
45–65	81 (53.3)	84 (57.9)	
>65	22 (14.5)	51 (35.2)	
Bahraini nationality [no.] (%)	83 (54.6)	106 (73.1)	<**0.01**
Risk factors			
Smoker [no.] (%)	52 (34.2)	39 (26.9)	0.17
Alcohol drinker [no.] (%)	13 (8.6)	10 (6.9)	0.59
High lipid [no.] (%)	56 (36.8)	102 (70.3)	<**0.01**
Renal = 1 [no.] (%)	26 (17.1)	46 (31.7)	<**0.01**
Ejection fraction [mean] (range)	0.57 (0.20–0.80)	0.54 (0.20–0.80)	0.21
Mortality–dead [no.] (%)	11 (7.2)	26 (17.9)	<**0.01**
Median follow-up time [months] (range)	30 (0.5–32)	24 (0.3–28)	<**0.01**
Blood pressure			
Systolic [mean mm Hg] (SD)	199.6 (±21.9)	200.8 (±20.6)	0.62
Diastolic [mean mm Hg] (SD)	114.1 (±18.0)	108.1 (±17.5)	<**0.01**
Pulse pressure [mean mm Hg] (SD)	85.5 (±22.4)	92.7 (±21.5)	<**0.01**
HBA1c [no. >53 mmol/l] (%)		117 (80.7)	

Bold values represent the significant P values among all variables tested.
Significant P value < 0.05.

(Table 1). Hyperlipidemia was more common among diabetics, and nearly one-third had renal impairment. At initial presentation, diabetics had lower diastolic blood pressure, and hence their pulse pressures were also higher (Table 1). Diabetics had higher mortality over the follow-up period, 26 (17.9%) compared with 11(7.2%) among the non-diabetics (P value < 0.01) (Table 1).

4.1. Fatal and nonfatal cardiovascular and non-cardiovascular events

Of the 297 patients in our cohort, 177 events were observed during the follow-up period, 37 fatal and 140 nonfatal. There were 26 fatal events among the diabetics and 11 among the nondiabetics (P value < 0.01) (Table 2). Mortality attributed to cerebrovascular events or to ACS was comparable between the diabetics and nondiabetics during the follow-up period. Mortality caused by heart failure, however, was much more prevalent among the diabetics upon follow-up (Table 2). There were also significantly more nonfatal events among the diabetics (115 vs. 25) (P < 0.01). Of the nonfatal cardiovascular events, recurrent acute left ventricular failure was predominant

Table 2
Frequency of fatal and non fatal events across two groups during follow up period.

	Non-diabetics (n = 152)	Diabetics (n = 145)	P value
Hypertensive urgency	115	57	0.001
Hypertensive emergency	37	86	0.001
Mortality (total fatal events)	11	26	0.001
Mortality across initial hypertensive crisis group			
Hypertensive urgency	1	4	0.01
Acute coronary syndrome	2	3	NS
Left ventricular failure	3	15	0.001
Cerebrovascular	5	4	NS
Non fatal events			
Hypertensive urgency	3	19	0.001
Acute coronary syndrome	6	12	0.001
Left ventricular failure	6	34	0.0001
Cerebrovascular	6	26	0.001
Renal failure	4	20	0.001
Atrial fibrillation	–	4	–

Download English Version:

https://daneshyari.com/en/article/2927219

Download Persian Version:

https://daneshyari.com/article/2927219

Daneshyari.com