Short Communication

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World Heart Day: Clinical case to raise awareness on cardiovascular disease in women

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Abstract: The World Heart Federation highlights that cardiovascular disease (CVD) is the leading cause of death in women worldwide. Indeed, women have unique female-specific risk factors for stroke, which include pregnancy, history of preeclampsia/eclampsia or gestational diabetes, duration of reproductive life, oral contraceptive use, and postmenopausal hormone therapy. In light of the female-specific risk factors and/or predisposing conditions, there is need to sensitize health professionals and the public in general on CVD in women. This clinical case is being shared with the written consent of the patient so as to avoid misdiagnosis or underdiagnosis of CVD among women.

Keywords: cardiovascular disease, women, vulnerability, awareness, transient ischemic attack, World Heart Day

1 Background

The World Heart Federation (WHF) highlights that cardiovascular disease (CVD) is the leading cause of death in women worldwide and that women with CVD continue to be underdiagnosed and undertreated due to misconceptions and lack of awareness among both patients and doctors [1]. The American Heart Association (2004) created *Go Red for Women*, a social initiative designed to empower women to take charge of their heart health, by raising awareness of heart disease and stroke being the number one killer of women [2]. Indeed, women have unique female-specific risk factors for stroke, which include pregnancy, history of preeclampsia/eclampsia or gestational diabetes, duration of reproductive life, oral contraceptive use, and postmenopausal hormone therapy [3]. Moreover, women who develop stroke more commonly have atrial fibrillation, hypertension, and migraine, while men with stroke are more likely to have coronary artery and peripheral vascular disease [3]. In light of the female-specific risk factors and/or predisposing conditions, there is a need to change the paradigm of underdiagnosing and undertreating CVD in women [4].

2 Objective

In the context of World Heart Day, which is marked on 29 September of each year, and in line with the WHF awareness campaign with the theme USE HEART FOR EVERY HEART [5], we hereby use heart for every heart and spread awareness on CVD in women. The sharing of this clinical case about a merry episode of drinking and singing during a social gathering has the objective to sensitize health professionals and the public in general about CVD in women.

3 Clinical case

After a merry singing episode at a wedding ceremony in a hotel setting, a 40-year-old woman felt unwell with nausea. She had drunk five glasses of cocktail (with alcohol) between 4 and 6 pm. She was thus accompanied to the washroom. It seemed that she was having the counter side of drinking on an empty stomach. After vomiting, she felt weak and could not walk. She was helped by two persons to lie down on a nearby mattress. Lying down on her left side, she looked grey. She complained of having difficulty in breathing and was seen to gasp intermittently. After some minutes, she looked slightly better and managed to open her eyes. At one point, she managed to move both hands by pointing her left and right index fingers. The general medicine doctor on call who arrived at 9 pm found the heartbeat was regular with normal pulmonary auscultation, the blood pressure was 10/6, and the glucometer test was 6.1 mmol/L.

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4 Decision-making

As a precautionary measure, the family decided to go to the nearest clinic to monitor the situation overnight. The patient was known to have episodic migraine and had hypertensive problems during her second pregnancy. Upon admission, the specialist doctor performed a general clinical examination, including a neurological assessment, which showed the impossibility to raise the left arm. The patient was clinically alert with spontaneous opening of the eyes, normal temporospatial orientation, and an appropriate response to instructions by the examiner. The Barré and Mingazzini tests were used to look for any subtle hemiparesis of the arm and leg [6]. While the Glasgow Coma Scale is commonly used to objectively describe the extent of impaired consciousness in all types of acute medical and trauma patients [7], the National Institutes of Health Stroke Scale is recommended as the gold standard [8].

The diagnosis of a Transient Ischemic Attack (TIA), which constitutes sudden neurologic dysfunctions caused by transient brain ischemia, was clinically put forward. Nonetheless, the investigations undertaken were revealed to be negative. This finding is in line with Madsen et al., who put forward that women admitted for suspected TIA are less likely to have imaging evidence of infarction than men [9]. Indeed, TIA represents a considerable risk for a subsequent ischemic stroke [10] to occur within the first weeks after a TIA [11]. An estimated 7.5–17.4% of patients with TIA will have a stroke in the next 3 months [12]. The risk of ischemic stroke following a TIA is directly related to its etiopathogenesis, which is commonly categorized within one of three domains: cardiac dysfunction, cerebrovascular pathology, or hematologic disorder [10]. Patients with TIA, therefore, require urgent evaluation and treatment that has the potential to significantly reduce the risk of recurrent stroke [10,11].

In this clinical case, the initial evaluation and management of the patient as well as measures for the prevention of stroke in this TIA patient were implemented as per prescribed guidelines [13,14]. Brain imaging, namely Computed Tomography Scan and Magnetic Resonance Imaging, as an essential part of the diagnostic approach, was performed within 24 h. Etiological investigations, namely Holter electrocardiogram and carotid ultrasonography, were undertaken, in addition to blood analysis and blood pressure monitoring. Screening for atrial fibrillation and carotid stenosis among other possible causes turned out to be negative. This is in line with the systematic review by Sposato et al., who showed the overall proportion of patients diagnosed with poststroke atrial fibrillation was found to be 23.7% after all phases of sequential cardiac monitoring [15]. Atrial fibrillation was not detected in more than three-quarters of patients with stroke or TIA [15].

5 Discussion

TIA diagnosis constitutes a challenge for physicians [16]. In this particular case, its somehow non-conventional clinical presentation was masked by the "chameleon" context of wedding celebration with binge drinking. The context lent support to attribute the symptoms to the consumption of alcoholic drinks. However, there is a need to consider the fact that binge drinking is associated with a higher risk of CVD [17,18]. Findings by Piano et al. support the notion that binge drinking is associated with a higher risk of stroke, myocardial infarction, and hypertension among middle-aged and older adults [17]. The possible mechanism of action, though not completely understood, is that binge drinking induces oxidative stress and vascular injury while being atherogenic [17]. Public health awareness campaigns regarding binge drinking need to include the effects of binge drinking on the cardiovascular system [17]. A systematic review by Tasnim et al. showed that within 6 h of consumption, high-dose alcohol (>30 g) decreased systolic blood pressure by 3.5 mmHg, decreased diastolic blood pressure by 1.9 mmHg, and increased heart rate by 5.8 beats per minute. With reference to Tasnim et al., the highly probable drop in blood pressure that affected cerebral circulation was the TIA mechanism [19]. In addition, the INTERSTROKE Study highlighted alcohol intake as a risk factor for acute stroke: a high level of alcohol intake was consistently associated with all stroke types, ischemic stroke, and intracerebral hemorrhage [20].

Irrespective of the setting and the context, there is a need to look for cardiovascular risk factors specific to women during the history-taking of female patients. The pertinent risk factor in this clinical case was the notion of preeclampsia during the second pregnancy and the presence of migraine in episodes. Indeed, preeclampsia is a sex-specific risk factor for future stroke that is likely under-recognized [21]. As a matter of fact, women with a history of preeclampsia have an 80% increased risk of future ischemic stroke than their counterparts without any such obstetrical history [21]. In addition, physicians have to inquire about any history of infertility, which is considered a potential sex-specific risk factor for cardiovascular events, despite the fact that the body of evidence on infertility and CVD is inconclusive to date [22,23]. Nonetheless, with CVD being the leading cause of death

among women in the world [24], the need for examination of sex-specific risk factors is being highlighted for timely diagnosis and proper treatment of women presenting with CVD.

With the view to increase awareness of CVDs, we highlight the public education message bearing the mnemonic FAST, for Face droop, Arm weakness, Speech difficulties and Time, which consists of three common stroke warning signs (Face droop, Arm weakness, and Speech problem) and one action (Time to dial emergency number) in case symptoms occur [25]. The subsequent stroke-screening scale, BE-FAST, acronym for Balance, Eyes, Face, Arm, Speech, Time, was developed with the inclusion of two additional criteria (Balance and Eye) to enhance stroke detection [26]. Nonetheless, BE-FAST and FAST scale accuracy for stroke identification was comparable [27]. In this clinical case, the fact that the person required help for walking was considered a weakness in relation to the lack of food intake prior to the alcohol intake and the subsequent vomiting. Indeed, FAST public awareness campaigns should be undertaken to sensitize the general population on the need to recognize stroke signs for prompt diagnosis and medical intervention to improve prognosis.

6 Conclusion

The clinical diagnosis was a TIA identified by a specialist doctor at the clinic where the patient was admitted. The emphasis is laid on the fact that there is a need for both specialist and non-specialist doctors to search for sex-specific cardiovascular risk factors and to exclude in the first line a CVD irrespective of age, gender, and social setting.

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