

# ATYPICAL PRESENTATION OF ISCHEMIC HEART DISEASE IN EGYPTIAN ELDERLY

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## Abstract

**Background:** Atypical symptoms often occur in elderly patients. It is common for elderly with ischemic heart disease (IHD) who present without chest pain or with vague symptoms which may mislead clinicians and delay the diagnosis. This might increase morbidity and mortality

**Aim:** To measure the proportion of IHD and the proportion of atypical IHD presentations in elderly patients  $\geq 60$  years old attending the Geriatric outpatient clinic in Geriatric hospital in Ain Shams University and to identify forms of atypical presentations of IHD in those elderly patients.

**Methods:** Cross-sectional study in which a total of 280 elderly patient  $\geq 60$  years old were enrolled. Data were collected using history taking, (sociodemographic and clinical data), physical examination, electrocardiogram, and echocardiography were collected.

**Results:** The total number of participants was 280, from which 172 (61.43%) participants were not suffering IHD and 108 (38.57%) were IHD. Among 108 IHD patients, 86 (79.73%) presented with typical symptoms while (22 patients 20.37%) presented with atypical symptoms in different forms. Atypical presentations included dyspnea (12 patients 54.55%), atypical chest pain (6 patients 27.27%), palpitation (2 patients 9.09%) and epigastric pain (2 patients 9.09%).

**Conclusion:** The study showed that elderly with IHD may present by symptoms other than the typical chest pain as found in (20.37%) of elderly with IHD. Dyspnea was the most common atypical presentation followed by atypical chest pain. So it is important to be minded with these atypical presentations to avoid misdiagnosis.

**Keywords:** Atypical presentations, Ischemic heart disease, elderly.

## Background

Worldwide, ischemic heart disease is an important medical issue, especially in elderly. Its prevalence increases significantly at the sixth decade of life, becoming the leading cause of death in older people. Elderly have the highest rate of occurrence of cardiovascular diseases and frequently present with acute coronary syndrome <sup>(1)</sup>.

In Egypt, the World Health Organization Rankings estimated deaths due to coronary artery disease (CAD) to be about 107,232 (23.14%) of all deaths. Age adjusted death rate of CAD is 186.36/100,000 population, which ranks Egypt as the 23<sup>rd</sup> among the world<sup>(15)</sup> and CAD become the first killer in Egypt in 2013 <sup>(16)</sup>.

Limpawattana et al. defined atypical presentations of the disease as patients with no signs and symptoms or unusual signs and symptoms, unrelated to or even the opposite of what is usually known <sup>(8)</sup>.

Because of physiological changes related to age and weakened homeostasis, the classic clinical picture of the disease is frequently absent in old patients, they often present with atypical symptoms <sup>(4)</sup>.

The commonest presentation of ischemic heart disease (IHD) in elderly is chest pain but frequently they present by atypical symptoms. Nearly 80% of patients < 65 years old present with chest pain, and only 40% of those > 85 years report chest pain. Absence of chest pain can lead to misdiagnosis or delayed diagnosis,

which worsens outcomes <sup>(2)</sup>.

Persons, instead of presenting with typical retrosternal chest pain, they often present with atypical symptoms such as dyspnea, diaphoresis, nausea and vomiting, syncope, confusion, fall, general weakness, malaise, incontinence, and immobility <sup>(2)</sup>.

Several theories explain this atypical presentation, one is the presence of other comorbidities such as diabetes, hypertension, chronic kidney diseases and etc. that make the clinical picture of ischemic heart disease unclear <sup>(4)</sup>. Increased threshold to pain in elderly is another possible explanation <sup>(5)</sup>.

Generally, 33% of ACS cases present with atypical presentations, which could be dyspnea (49.3%) <sup>(7)</sup>.

There is little information about atypical presentation of IHD in Egypt. In a 5-month prospective multicenter study of the GULF Registry of Acute Coronary Events (GULF RACE), done in 2007. The study recruited ACS patients from 6 Middle Eastern countries (Bahrain, Kuwait, Qatar, Oman, United Arab Emirates, and Yemen) and enrolled 6420 patients. Among the 5349 registered participants, it was found that (83%) had typical chest pain, (11%) had dyspnea, (6%) had atypical chest pain followed by, palpitation (1.1%), loss of consciousness (1.1%) and others (2%). The total ratio of atypical presentations was (21.2%) of IHD patients <sup>(1)</sup>.

In Bagdad Teaching Hospital study, the prevalence of atypical IHD presentation is 18.7%. The most common atypical presentation was dyspnea (43%) followed by altered mentation and abdominal pain <sup>(10)</sup>.

Reports of prevalence of atypical IHD presentation in elderly ranges worldwide from 20% in India <sup>(14)</sup> to 24.8% in Korea <sup>(4)</sup>.

As early recognition and management of atypical presentation results in positive health outcomes by prompt accurate diagnosis, reducing the risk of new comorbidities, reducing hospital length of stay, and improving quality of life<sup>(2)</sup>. It is crucial to know the prevalence, forms and clinical attributes of these atypical presentation of IHD among Egyptian elderly for swift recognition and management in the clinical setting.

## Methods

A cross sectional study was conducted to find out A cross sectional study was conducted in Geriatric outpatient clinic in Geriatric hospital in Ain Shams University from October 2019 to December 2019. It included 280 participants that fulfill the inclusion criteria, elderly aged  $\geq 60$  years, both males and females. Elderly patients with conditions that impairs communications as patients with moderate to severe cognitive impairment, hearing impairment, and patients with aphasia were excluded.

The total number of cases collected is 280. The sample size was calculated using PASS 11.0 and assuming frequency of atypical presentation of IHD in elderly=  $20\% \pm 5$ , sample size of 246 persons can detect this

frequency with 95% confidence. According to a previous study finding carried out by (Sandhya et al., 2017) that showed that the prevalence of atypical presentation of IHD in elderly is 20%.

The study sample was collected conveniently on two days per week for three months by collecting all available cases that fulfill the inclusion criteria on those days.

According to European Society of Cardiology Guidelines (2019), proper history taking/physical examination, resting electrocardiogram (ECG) and resting echocardiography (ECHO) are used in diagnosis of coronary artery syndrome <sup>(6)</sup>.

Participants were interviewed using a semi-structured questionnaire including (age, sex, marital status, smoking, manifestations of ischemic heart disease as: dyspnea on exertion, palpitation, chest pain: typical and atypical symptoms were asked in details for every participant, manifestations of heart failure, risk factors as: diabetes, hypertension, dyslipidemia, evidence of past history of IHD as: previous myocardial infarction, coronary artery angiography, past history of coronary artery revascularization either percutaneous coronary intervention (PCI) or coronary artery bypass graft (CABG), medication review including anti-hypertensive drugs (beta blockers, ACEI, CCBS), oral hypoglycemic, insulin, lipid lowering drugs, anti-ischemic drugs: aspirin, nitroglycerin, others as vitamins and any drugs for other chronic diseases. Proper physical examination: general examination, Cardiac auscultation, Chest auscultation. Investigations as resting electrocardiogram (ECG) and resting echocardiography (ECHO) which shows ejection fraction, resting wall motion abnormality (RWMA), diastolic dysfunction and its grades: (mild, moderate, severe), presence or absence of mitral valve regurge or aortic valve regurge.

The collected data were revised, coded, tabulated, and introduced to a PC using Statistical package for Social Science program (SPSS 20 for windows). Data checking for quality of data and data entry was performed. Data was presented and suitable analysis was done according to the type of data obtained for each parameter.

## Results

The sociodemographic data of 280 participants is shown in table (1). The mean age  $\pm$ SD of the whole population was ( $66 \pm 6$  years), ranging from 60 - 86 years. Males composed 54.29% of the whole population, while females represented 45.71%. As regard smoking, 37.86% of the whole population study were current smokers.

The frequency of IHD among whole population study was 61.43% (172 participants) and the frequency of non-IHD is 38.57% (108 participants) as shown in figure (1). Among 108 IHD participants, (86 participants) 79.73% presented with typical symptoms while 20.37% (22 participants) presented with atypical symptoms as shown in figure (2).

Table (1): Description of the whole population.

Description of the whole population		Total N= 280	
Age	Range	60 - 86	
	Mean ±SD	66.329 ± 5.856	
Gender	Male	N	%
	Female	152	54.29
Smoking	No	128	45.71
	Smoker	163	58.21
	Ex-smoker	106	37.86
No. of years of smoking	Range	4 - 50	
	Mean ±SD	32.455 ± 15.807	
No. of cigarette Per day.	Range	4 - 20	
	Mean ±SD	9 ± 5	

Figure 1: Proportion of IHD among whole population study.

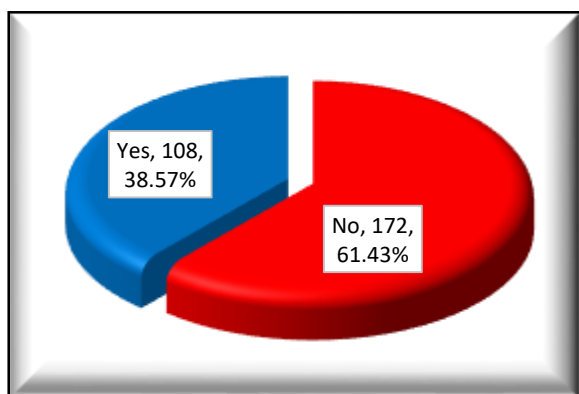


Figure 2: Proportion of typical and atypical presentations among IHD participants.

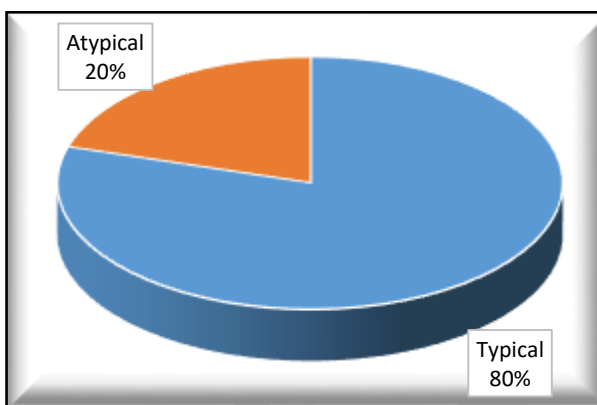


Table 2: Frequency of different forms of atypical presentations of IHD.

Atypical presentations of IHD		N	%
Atypical presentations	Dyspnea	12	54.55
	Atypical chest pain	6	27.27
	Epigastric pain	2	9.09
	Palpitation	2	9.09
Total		22	100

Table (3): The socio-demographic characteristics in relation to the three groups.

Socio-demographic Characteristics	Range	Groups						F	P-value			
		Non-IHD		Typical		Atypical						
Age		60	-	86	60	-	83	60	-	81	8.629	<0.001*
	Mean ±SD	65.622	±	5.675	66.558	±	5.685	70.955	±	5.988		
		N		%	N		%	N		%	X <sup>2</sup>	P-value
Age	60-70 Years	147		85.47	68		79.07	11		50.00	15.976	<0.001**
Group	>70 Years	25		14.53	18		20.93	11		50.00		
Gender	Male	80		46.51	60		69.77	12		54.55	12.496	>0.005**
	Female	92		53.49	26		30.23	10		45.45		
Marital Status	Single	4		2.33	1		1.16	1		4.55	1.340	>0.005**
	Married	129		75.00	64		74.42	15		68.18		
	Divorced	39		22.67	21		24.42	6		27.27		
Current Smoker	No	122		70.93	33		38.37	8		36.36	34.821	<0.001**
	Smoker	48		27.91	47		54.65	11		50.00		
	Ex-smoker	2		1.16	6		6.98	3		13.64		

\*Calculated by ANOVA \*\* Calculated by Chi-Square

The different forms of atypical presentations of IHD are presented in table (2). Among 22 participants with atypical presentations; 12 participants (54.55%) presented with dyspnea, 6 participants (27.27%) presented with atypical chest pain which is defined as any chest pain that does not meet Heberden's classic description (classic angina), which occurred when increased cardiac work or emotional disturbance provoked chest pain and was relieved by rest or the administration of nitroglycerin, 2 participants (9.09%) presented with palpitation and 2 (9.09%) presented with epigastric pain.

There is significant statistical difference (P<0.05) between non-IHD group, typical and atypical IHD group regarding mean age, age group, sex and smoking. The mean age is the highest in atypical IHD patients (70.96 ± 5.99) and the lowest in non-IHD patients (65.6 ± 5.66). The ratio of patients in age group (>70 Years) in atypical IHD is (50%) which is the highest between the three groups. According to gender, male is the most predominant in typical IHD participants with ratio (69.77%). While the female sex is the most predominant in non-IHD participants with ratio (53.49%) followed by atypical IHD with ratio (45.45%) as shown in table (3).

#### DISCUSSION

The early recognition and management of atypical presentations among elderly patients can potentially result in positive health outcomes through early accurate diagnosis and treatment (3). This can reduce the risk of new comorbidities, hospital length of stay, and improve outcome. As far as we know there is little information about atypical presentations of IHD in Egypt. This cross-sectional study examined a sample of 280 elders to calculate the frequency of atypical presentations of IHD.

The proportion of typical IHD participants was 38.57% (108 participants) while the proportion of atypical

presentations among IHD elderly was 20.37% (22 participants). The most common atypical form was dyspnea 54.55% (12 patients), followed by atypical chest pain 27.27% (6 patients), epigastric pain 9.09% (2 patients) and palpitation 9.09% (2 patients).

These results agree with studies in Arab countries as in Bagdad Teaching Hospital study, from a total number of 624 patients from different age groups, 66% of them ≥ 60 years old admitted and diagnosed with ACS, 18.7% of patients presented with atypical presentation of ACS. Most common atypical presentation was dyspnea (43%) followed by altered mental state (15%) and (9%) with abdominal pain (10).

In GULF study from 5349 patients admitted, (83%) had typical chest pain, 401(6%) had atypical chest pain, and 670 (11%) had dyspnea. Patients who had different presentations (284 patients) such as loss of consciousness (1.1%), palpitation (1.1%), others (2%) (1).

The current results agree with a study conducted in Korea that showed the prevalence of atypical presentations in elderly with ischemic heart disease was (24.8%) which is higher than the prevalence in our study (4).

The presence of atypical symptoms in elderly patients might be related to physiological changes related to age and weakened homeostasis (4). Also aging is associated with cellular oxidative stress, inflammation, and shifts in gene expression that contribute to increased vascular stiffness, endothelial dysfunction, and thrombogenicity that might also contribute (9). The presence of other comorbidities in elderly makes the clinical picture of ischemic heart disease unclear (5).

The current study showed that dyspnea was the most common form of atypical presentations in IHD elderly with (54.55%). It has been reported that the classic chest pain decreases with age, whereas the symptom of dyspnea gradually increases (11). Previous studies

showed that dyspnea is the most frequent atypical symptom of myocardial ischemia in elderly patients<sup>(13)</sup>, as found in a study conducted by Jung, Y. J et al 2017, dyspnea represents (50%) of atypically presented IHD patients<sup>(4)</sup>. Also in Worcester Heart Attack Study, chest pain was reported in less than half -of the patients over age 75 years (45.5%) and the remaining complained of atypical presentations and dyspnea was the most common<sup>(14)</sup>. But in another study, syncope was the commonest atypical IHD presentation not ‘dyspnea’ in ACS elderly admitted in intensive care unit<sup>(12)</sup>. Dyspnea in the elderly MI patient may be due to age-related diastolic dysfunction and associated pulmonary disease<sup>(14)</sup>.

The reasons why dyspnea is frequent in IHD elderly patients may be due to age-related diastolic dysfunction and associated pulmonary diseases<sup>(14)</sup>. Increased arterial stiffness as manifested with increased arterial pulse pressure as well as increased prevalence of multivessel coronary artery affection that may explain why older patients with ACS are more likely to present with signs and symptoms of CHF<sup>(2)</sup>.

The second most common atypical presentation of IHD in elderly in our study was atypical chest pain, which described as not classic in presentation; not exactly like the typical chest pain; may be a burning, sharp, pleuritic, positional pain or discomfort that is reproducible on palpation of the chest wall and localizable by one finger, or pain or discomfort in areas of the upper body other than the chest, such as the arms, epigastrium, shoulder, and neck.

In general, the incidence of typical precordial chest pain denoting myocardial ischemia is less common in elderly. Even when classic ischemic precordial discomfort is present, it tends to be less severe and less well defined. The elderly appear to have reduced pain perception; as a result, atypical chest pain and silent myocardial ischemia is more common<sup>(11)</sup>. Chest pain may arise from the stimulation of either visceral or somatic pain fibers. Visceral fibers originate from the heart, esophagus, blood vessels and visceral pleura, which enter the spinal cord at multiple levels. Stimulation of these fibers from any cause produces symptoms that are poorly localized and often difficult for patients to describe<sup>(13)</sup>.

## CONCLUSION:

The proportion of atypical IHD presentation among IHD elderly attending Geriatric outpatient clinic in Ain shams University hospital is (20.37%). In this study atypical IHD presentation is more in older ages.

## Ethical consideration:

The study was conducted after obtaining informed consent from each participant after explaining the aims and the benefits of the study. The study was approved by the Research Ethics Committee of Faculty of Medicine, Ain shams University.

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## Conflict of interests

Authors declare no conflict in interest present in this study.

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