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Prevalence of Coronary Artery Ectasia among Egyptian Patients with Coronary Artery Disease, retrospective analysis; Mansoura University Cardiology Department.

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Abstract

Background: Coronary artery ectasia (CAE) is mainly diagnosed with coronary angiography and is characterized by abnormal dilatation of the coronary arteries by more than 1.5 times the adjacent normal vessels. This study aimed to evaluate the CAE prevalence among Egyptian patients with coronary artery disease (CAD).

Results: The prevalence of ectasia was 6.66%. There was a significant increase in the prevalence of CAE among males (9.05%) than females (2.71%) (P < 0.001). Additionally, a significant increase was observed in CAE prevalence in the presence of any positive RF (7.11%) than in the absence of any RF (2.22%) (P <0.001). Furthermore, the prevalence of CAE was significantly higher among smokers than non-smokers (11.11% vs. 5.65%, respectively, P < 0.001), patients with atherosclerosis than cases with coronary lumen stenosis (12.48% vs. 5.94%, respectively, P < 0.001). The prevalence was low in cases with normal angiographic appearance (0.70%, P < 0.001).

Conclusions: The prevalence of CAE among patients admitted for diagnostic catheterization is similar to that reported in other Egyptian studies but higher than worldwide ones. It is predominant in males and more prevalent in smokers. Also, there is an increase in ectasia prevalence in patients with atherosclerosis.

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Keywords: Prevalence, Coronary Artery Ectasia, Coronary Artery Disease, Coronary Angiogram.

Background

Coronary artery ectasia (CAE) is defined as a diffuse dilatation exceeding more than one-third of the coronary artery length, with a diameter of the ectatic segment 1.5 times greater than that of the adjacent normal segment [1, 2].

Coronary angiogram is the gold-standard diagnostic tool for detecting coronary aneurysms. Moreover, it provides detailed information about their shape, size, extent, and associated coronary artery diseases [3].

CAE is characterized based on its form and the amount of coronary artery involvement [4]. Previous research revealed that the prevalence of CAE ranges from 1.2 to 4.9%. It is either isolated ectasia or associated with coronary artery disease (CAD), hypertension, diabetes mellitus, or dyslipidemia [1, 5, 6].

The co-occurrence of CAE and coronary atherosclerosis raises the possibility that ectasia is a subtype of CAD; nevertheless, a definitive relationship between atherosclerosis and ectasia has not been established [7].

Moreover, coronary aneurysms are sometimes associated with systemic vasculitis and collagen and connective tissue disorders [8]. In addition, aneurysmal lesions (mainly pseudoaneurysms) can develop following coronary treatments such as balloon angioplasty, stent implantation, directed coronary atherectomy, pulsed laser coronary angioplasty, or brachytherapy [9].

This study evaluated the CAE prevalence among Egyptian patients with CAD in XXX University Hospital.

Methods

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This is a single-center, retrospective study. We reviewed coronary angiography reports of all patients subjected to coronary angiography at Mansoura University Hospital, Cardiovascular Medicine Department, from January 2019 to December 2019. The study comprised 2929 diagnostic coronary angiographic reports selected from 4030 performed at the same setting mentioned above.

Exclusion criteria were reports of failed access, reports of incomplete diagnostic procedures, reports of PCI procedures, and reports denoting patients with previous CABG surgery.

Methods for report selection and analysis

The first step was reviewing the soft copies of all angiographic reports (4030) from January 2019 to December 2019. All data were copied and pasted into a specific prepared Excel sheet designed by the principal investigator.

This excel sheet was prepared to fulfill the following items: date of coronary angiography, patient ID, demographic data (age, sex), indication for a coronary angiogram (chest pain/angina/angina equivalent), acute myocardial infarction (AMI) (STEMI/Non-STEMI), unstable angina, remote myocardial infarction (recent and old), assessment of coronaries in DCM or unexplained HF, coronary assessment after PCI and CABG, or before prosthetic valve surgery, correction of congenital anomaly, excision of LA myxoma, or non-cardiac major surgery. The risk factors were hypertension, diabetes mellitus, ischemic heart disease, smoking, family history of CAD, dyslipidemia, and previous history of ischemic heart disease (IHD). The main ECG data were normal, abnormal, or myocardial infarction, while the main echocardiogram data were global LV systolic performance and SWMA. Laboratory data included serum creatinine, INR, and virology tests.

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Coronary angiographic data included approach site, description of each vessel, the dominance of circulation (right, left, or balanced), angiographic reports, and coronary vessel status (normal, atherosclerotic CAD, non-obstructed CAD, obstructed CAD, or ectasia).

The second step was screening all reports against the inclusion and exclusion criteria. Accordingly, 1101 reports were excluded due to failure to vascular access (5 reports), incomplete diagnostic procedures (8 reports), PCI procedures (1053 reports) [Adhok PCI (595 reports), non-Adhok PCI (410 reports), and primary PCI (48 reports)], and previous CABG surgery (35 reports).

Statistical analysis

SPSS version 21 was used to analyze the data. Means, standard deviations, and ranges were used to describe the data. For categorical data, percentages and numbers were used. For normally distributed numeric variables, the t-test was used to compare the two groups. For categorical variables, differences were analyzed using X^2 (chi-square) and, if appropriate, Fisher's exact test. A difference was considered significant when the P-value was < 0.05.

Results

Males predominated in this study (62.3%). The mean age was 56.2 ± 9.18 years. Less than one-quarter were smokers (18.4%). About half had hypertension (45.4%), and one-third (30.4%) had diabetes. Ischemic heart disease was reported in 3.4%, while only one patient had dyslipidemia.

The prevalence of ectasia was 6.66%. It was significantly higher among males (9.05%) than females (2.71%) ($P < 0.001$). Additionally, a significant increase was observed in the prevalence of CAE in the presence of any positive risk factor (7.11%) compared to the absence of any positive RF (2.22%) ($P < 0.001$). Furthermore, there was a

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significant increase in the prevalence of CAE among smokers (11.11% vs. 5.65, P < 0.001). In contrast, all other risk factors were insignificant (P > 0.05). Table 1

The prevalence of CAE was significantly higher among cases with wall atherosclerosis (12.48%) than among cases with coronary lumen stenosis (5.94%) and was least among cases with normal angiographic appearance (0.70%) (P < 0.001). Table 2

Discussion

CAE is characterized by localized or extensive dilatation of the coronary artery lumen over the maximal diameter of an adjacent normal coronary channel by 1.5 times [10].

In our study, CAE was present in 195 cases among 2929 diagnostic coronary angiography (6.65%). The prevalence was more frequent among males than females (9.05% vs. 2.7%, P < 0.001).

Although many published CAE studies revealed variations in global CAE prevalence (0.3-5%), all studies report higher prevalence among males than females. Wang et al. [11] studied 4788 patients who presented with acute coronary syndrome and underwent coronary angiogram. They revealed that CAE prevalence is 3.6%, with a higher prevalence in males (81.6%) than in females (18.4%).

In another prospective study conducted on 200 patients, 100 of them had CAE, with an increase in the prevalence among males (70%) than females (30%) [12]. A retrospective analysis of 1115 coronary angiograms revealed that 67 patients had associated CAE (6.0%) [13].

Nyamus et al. [14], in their retrospective study, reported that isolated CAE cases comprised more males (82.8%) than females (17.2%). Furthermore, an Indian study reviewed 3200 coronary angiographies and revealed CAE prevalence to be 4.5% [15].

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This discrepancy in the reported prevalence between various studies and ours might be related to differences in age, clinical characteristics, presentations, patients' selection, diagnostic approaches, or geographic variations.

The gender difference in prevalence has been reported and is primarily related to the lower incidence of coronary artery disease in women [16]. As regards age, the prevalence of CAE did not differ among age sub-groups (7.04% in ages < 40 years, 6.47% in ages 40-60 years, and 6.98% in ages >60 years). Wang et al. [11] revealed an insignificant difference in age between CAE and non-ectasia groups (62 ±12 vs. 63 ±12).

The current study showed a significant increase in the CAE prevalence among smokers (11.11% vs. 5.65, P < 0.001). A retrospective study on 138 CAE patients revealed that smoking is frequent among CAE patients (56.8%) [17].

In our study, CAE did not significantly differ according to hypertension or diabetes. In line with these findings, Wang et al. [11] revealed a non-significant difference in CAE prevalence between diabetics and non-diabetics (6.9% vs. 13.2%). However, a retrospective study conducted by Rashid et al. [17] on 138 patients who underwent coronary angiography, of which 81 patients had proved CAE, reported that diabetes is less frequent in CAE patients compared to patients without CAE (32.1% vs. 42.1%, P < 0.001).

Regarding CAE and IHD, Wang et al. [11] confirmed our findings. They concluded a non-significant difference in CAE prevalence between patients with known IHD and those without (11.1% versus 8.9%).

Regarding Dyslipidemia and CAE, Rashid et al. [17] reported that dyslipidemia is less prevalent in CAE patients (29.6%). However, in our study, the prevalence of dyslipidemia could not be estimated as most reports miss comments on dyslipidemia.

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Conclusions

The prevalence of CAE in Egyptian patients with CAD is 6.66%. It is similar to that reported in other Egyptian studies but higher than worldwide studies. CAE is predominant in males and smokers. Additionally, there is an increased prevalence of wall Atherosclerosis among ectatic vessels.

List of Abbreviations

CAE	Coronary artery Ectasia
RF	Risk Factors
LAD	Left anterior descending
MI	Myocardial infarction
CASS	coronary Artery Surgery Study
CAD	Coronary artery disease
STEMI	ST-elevation myocardial infarction
ECG	electrocardiogram
IHD	Ischemic Heart Disease
HTN	Hypertension
DM	Diabetes Mellitus
LV	left ventricular
INR	**international normalized ratio**
ASD	**Atrial septal defect**
DCM	**dilated cardiomyopathy**

References

1. Swaye PS, Fisher LD, Litwin P, et al. Aneurysmal coronary artery disease. *Circulation*. 1983;**67**:134-8. https://doi.org/10.1161/01.cir.67.1.134

2. Esposito L, Di Maio M, Silverio A, et al. Treatment and Outcome of Patients With Coronary Artery Ectasia: Current Evidence and Novel Opportunities for an Old Dilemma. *Front Cardiovasc Med*. 2021;**8**:805727. https://doi.org/10.3389/fcvm.2021.805727

3. Abou Sherif S, Ozden Tok O, Taşköylü Ö, et al. Coronary Artery Aneurysms: A Review of the Epidemiology, Pathophysiology, Diagnosis, and Treatment. *Front Cardiovasc Med*. 2017;**4**:24. https://doi.org/10.3389/fcvm.2017.00024

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4. Khedr A, Neupane B, Proskuriakova E, et al. Pharmacologic Management of Coronary Artery Ectasia. *Cureus*. 2021;**13**:17832.

5. Hartnell GG, Parnell BM, Pridie RB. Coronary artery ectasia. Its prevalence and clinical significance in 4993 patients. *Br Heart J*. 1985;**54**:392-5. https://doi.org/10.1136/hrt.54.4.392

6. Al-Makhamreh HK, Shaban AE, AlHaddadin SS, et al. Is Lipoprotein (a) a Risk Factor for Coronary Artery Ectasia? *Cardiol Res*. 2020;**11**:50-5. https://doi.org/10.14740/cr992

7. Huang QJ, Zhang Y, Li XL, et al. Clinical features of coronary artery ectasia in the elderly. *J Geriatr Cardiol*. 2014;**11**:185-91. https://doi.org/10.11909/j.issn.1671-5411.2014.03.012

8. Gori T. Coronary Vasculitis. *Biomedicines*. 2021;**9**. https://doi.org/10.3390/biomedicines9060622

9. Krajcer Z, Howell MH. Update on endovascular treatment of peripheral vascular disease: new tools, techniques, and indications. *Tex Heart Inst J*. 2000;**27**:369-85.

10. Venuti N, Mangano A. Severe Coronary Artery Ectasia in a 31-Year-Old Presenting With an Inferior ST-Elevation Myocardial Infarction: A Case Report. *Cureus*. 2022;**14**.

11. Wang X, Montero-Cabezas JM, Mandurino-Mirizzi A, et al. Prevalence and Long-term Outcomes of Patients with Coronary Artery Ectasia Presenting with Acute Myocardial Infarction. *Am J Cardiol*. 2021;**156**:9-15. https://doi.org/https://doi.org/10.1016/j.amjcard.2021.06.037

12. Qin Y, Tang C, Ma C, et al. Risk factors for coronary artery ectasia and the relationship between hyperlipidemia and coronary artery ectasia. *Coron Artery Dis*. 2019;**30**:211-5.

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 11, 2023

13. Almansori MA, Elsayed HA. Coronary artery ectasia - A sample from Saudi Arabia. *J Saudi Heart Assoc*. 2015;**27**:160-3. https://doi.org/10.1016/j.jsha.2015.03.005

14. Nyamu P, Ajit MS, Joseph PK, et al. The Prevalence and Clinical Profile of Angiographic Coronary Ectasia. *Asian Cardiovascular and Thoracic Annals*. 2003;**11**:122-6. https://doi.org/10.1177/021849230301100207

15. Harikrishnan S, Sunder KR, Tharakan J, et al. Coronary artery ectasia: angiographic, clinical profile and follow-up. *Indian Heart J*. 2000;**52**:547-53.

16. Sadhanandham S, David D, Muralidharan T, et al. Analysis of Coronary Artery Ectasia: Experience from a Tertiary Care Hospital in South India. *Int J Sci Study*. 2015;**3**:151-4.

17. Rashid S, Gul U, Ali M, et al. Coronary Artery Ectasia: Clinical and Angiographic Features. *J Coll Physicians Surg Pak*. 2018;**28**:824-8. https://doi.org/10.29271/jcpsp.2018.11.824

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Results: The prevalence of ectasia was 6.66%. There was a significant increase in the prevalence of CAE among males (9.05%) than females (2.71%) (P < 0.001). Additionally, a significant increase was observed in CAE prevalence in the presence of any positive RF (7.11%) than in the absence of any RF (2.22%) (P <0.001). Furthermore, the prevalence of CAE was significantly higher among smokers than non-smokers (11.11% vs. 5.65%, respectively, P < 0.001), patients with atherosclerosis than

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cases with coronary lumen stenosis (12.48% vs. 5.94%, respectively, P < 0.001). The prevalence was low in cases with normal angiographic appearance (0.70%, P < 0.001).

Conclusions: The prevalence of CAE among patients admitted for diagnostic catheterization is similar to that reported in other Egyptian studies but higher than worldwide ones. It is predominant in males and more prevalent in smokers. Also, there is an increase in ectasia prevalence in patients with atherosclerosis.

Keywords: Prevalence, Coronary Artery Ectasia, Coronary Artery Disease, Coronary Angiogram.

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Moreover, coronary aneurysms are sometimes associated with systemic vasculitis and collagen and connective tissue disorders [8]. In addition, aneurysmal lesions (mainly pseudoaneurysms) can develop following coronary treatments such as balloon

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Statistical analysis

SPSS version 21 was used to analyze the data. Means, standard deviations, and ranges were used to describe the data. For categorical data, percentages and numbers were used. For normally distributed numeric variables, the t-test was used to compare the two groups. For categorical variables, differences were analyzed using X^2 (chi-square) and, if appropriate, Fisher's exact test. A difference was considered significant when the P-value was < 0.05.

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Males predominated in this study (62.3%). The mean age was 56.2 ± 9.18 years. Less than one-quarter were smokers (18.4%). About half had hypertension (45.4%), and one-third (30.4%) had diabetes. Ischemic heart disease was reported in 3.4%, while only one patient had dyslipidemia.

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DM	Diabetes Mellitus
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INR	**international normalized ratio**
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DCM	**dilated cardiomyopathy**

References

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2. Esposito L, Di Maio M, Silverio A, et al. Treatment and Outcome of Patients With Coronary Artery Ectasia: Current Evidence and Novel Opportunities for an Old Dilemma. *Front Cardiovasc Med*. 2021;**8**:805727. https://doi.org/10.3389/fcvm.2021.805727

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3. Abou Sherif S, Ozden Tok O, Taşköylü Ö, et al. Coronary Artery Aneurysms: A Review of the Epidemiology, Pathophysiology, Diagnosis, and Treatment. *Front Cardiovasc Med*. 2017;**4**:24. https://doi.org/10.3389/fcvm.2017.00024

4. Khedr A, Neupane B, Proskuriakova E, et al. Pharmacologic Management of Coronary Artery Ectasia. *Cureus*. 2021;**13**:17832.

5. Hartnell GG, Parnell BM, Pridie RB. Coronary artery ectasia. Its prevalence and clinical significance in 4993 patients. *Br Heart J*. 1985;**54**:392-5. https://doi.org/10.1136/hrt.54.4.392

6. Al-Makhamreh HK, Shaban AE, AlHaddadin SS, et al. Is Lipoprotein (a) a Risk Factor for Coronary Artery Ectasia? *Cardiol Res*. 2020;**11**:50-5. https://doi.org/10.14740/cr992

7. Huang QJ, Zhang Y, Li XL, et al. Clinical features of coronary artery ectasia in the elderly. *J Geriatr Cardiol*. 2014;**11**:185-91. https://doi.org/10.11909/j.issn.1671-5411.2014.03.012

8. Gori T. Coronary Vasculitis. *Biomedicines*. 2021;**9**. https://doi.org/10.3390/biomedicines9060622

9. Krajcer Z, Howell MH. Update on endovascular treatment of peripheral vascular disease: new tools, techniques, and indications. *Tex Heart Inst J*. 2000;**27**:369-85.

10. Venuti N, Mangano A. Severe Coronary Artery Ectasia in a 31-Year-Old Presenting With an Inferior ST-Elevation Myocardial Infarction: A Case Report. *Cureus*. 2022;**14**.

11. Wang X, Montero-Cabezas JM, Mandurino-Mirizzi A, et al. Prevalence and Long-term Outcomes of Patients with Coronary Artery Ectasia Presenting with Acute Myocardial Infarction. *Am J Cardiol*. 2021;**156**:9-15. https://doi.org/https://doi.org/10.1016/j.amjcard.2021.06.037

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12. Qin Y, Tang C, Ma C, et al. Risk factors for coronary artery ectasia and the relationship between hyperlipidemia and coronary artery ectasia. *Coron Artery Dis*. 2019;**30**:211-5.

13. Almansori MA, Elsayed HA. Coronary artery ectasia - A sample from Saudi Arabia. *J Saudi Heart Assoc*. 2015;**27**:160-3. https://doi.org/10.1016/j.jsha.2015.03.005

14. Nyamu P, Ajit MS, Joseph PK, et al. The Prevalence and Clinical Profile of Angiographic Coronary Ectasia. *Asian Cardiovascular and Thoracic Annals*. 2003;**11**:122-6. https://doi.org/10.1177/021849230301100207

15. Harikrishnan S, Sunder KR, Tharakan J, et al. Coronary artery ectasia: angiographic, clinical profile and follow-up. *Indian Heart J*. 2000;**52**:547-53.

16. Sadhanandham S, David D, Muralidharan T, et al. Analysis of Coronary Artery Ectasia: Experience from a Tertiary Care Hospital in South India. *Int J Sci Study*. 2015;**3**:151-4.

17. Rashid S, Gul U, Ali M, et al. Coronary Artery Ectasia: Clinical and Angiographic Features. *J Coll Physicians Surg Pak*. 2018;**28**:824-8. https://doi.org/10.29271/jcpsp.2018.11.824

Table 1: Prevalence of coronary artery ectasia among All cases and among different demographic and risk factor variable

	Total number	Ectasia Frequency		Significance
		Number	Percentage	
Total Group	2929	195	(6.66%)	
Gender				
Male	1824	165	(9.05%)	$\chi 2$=9.48 P=0.00
Female	1105	30	(2.71%)	
Age Subgroups				
Age <40 y	142	10	(7.04%)	$\chi 2$= 0.55 P >0.05
Age 40-60 y	1870	121	(6.47%)	
Age >60 y	917	64	(6.98%)	
Gender Risk				
Positive Gender Risk	1824	165	(9.05%)	$\chi 2$=9.48 P < 0.000
Negative Gender Risk	1105	30	(2.72%)	
Age Risk				

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Positive Age Risk	1472	105	(7.12%)	$\chi 2$= 1.08 P >0.05
Negative Age Risk	1457	90	(6.18%)	
Smoking				
Smokers	540	60	(11.11%)	$\chi 2$=27.6 P < 0.000
Non-Smokers	2389	135	(5.65%)	
Hypertension				
Hypertensive	1331	93	(6.99%)	$\chi 2$= 0.58 P >0.05
Not_Hypertensive	1598	102	(6.38%)	
Diabetes Mellitus (DM)				
Diabetes Mellitus (DM)	891	50	(5.61%)	$\chi 2$=2.31 P >0.05
No DM	2038	145	(7.11%)	
Ischemic Heart Disease				
Previous IHD	99	10	(10.10%)	$\chi 2$=1.96 P >0.05
No_IHD	2830	185	(6.54%)	
Dyslipidemia				
Dyslipidemia	1	0	(0.0%)	$\chi 2$=0.71 P >0.05
No Dyslipidemia	2928	195	(6.65%)	

IDH: Ischemic Heart Disease

Table 2: Prevalence of coronary artery ectasia among different coronary angiographic lesions

Coronary angiographic Lesions	Total Cases (2929)	Ectasia (195)		Significance
		Number	Percentage	
Normal Angiographic appearance	575	4	(0.70%)	$\chi 2$= 143.4 P < 0.000
Wall Atherosclerosis	771	97	(12.48%)	
Coronary Lumen Stenosis**	1583	94	(5.94%)	

**any lesion stenosis (non-obstructed or obstructed).