



### RESEARCH ARTICLE

#### PAINLESS ACUTE AORTIC DISSECTION: BE AWARE OF MISDIAGNOSIS AND RULING OUT A SERIOUS DANGER.

Karima Bentahar<sup>1</sup>, Soumia Saidi<sup>2</sup> and V. Dormagen<sup>2</sup>.

1. Cardiology Department, Ibn Sina hospital –Rabat–Maroc.
2. Cardiology Department, Simone Veil hospital –Eaubonne –France.

#### Manuscript Info

##### Manuscript History

Received: 13 March 2019  
Final Accepted: 15 April 2019  
Published: May 2019

##### Key words:-

painless, aortic dissection, type A of Stanford.

#### Abstract

The aortic dissection is a relatively rare but fatal event; it is often misdiagnosed in front of a very variable clinical presentation and falsely reassuring.

We report a case of a 45-year-old hypertensive smoking patient, admitted to the emergency department for fatigue sensation and discomfort, physical examination revealed a rough systolic murmur and the transthoracic echocardiography showed a dissection flap from the ascending aorta to the thoracic aorta and a moderate acute IAO, emergency CT angiography showed a type A aortic dissection from supra aortic trunks to iliac arteries, the patient was transferred to cardiac surgery and was operated immediately with a satisfactory postoperative transthoracic echocardiography and CT angiography control.

Through this case and a review of the literature we would like to shed light on this non-exceptional case that can be catastrophic if not diagnosed and managed promptly.

Copy Right, IJAR, 2019., All rights reserved.

#### Introduction:-

An aortic dissection (AD) is a tear in the inner lining of the aorta. Causing blood to flow into the lining and separates the aorta wall layers creating false lumen. If the blood pressure is high it can cause rupture and be deadly.

Stanford classified aortic dissection into two types: Type A originating in the ascending aorta which constitute an emergency and requires an urgent surgical intervention, to decrease mortality. Or Type B originating in the descending portion of the aorta and could be managed without surgery by carefully controlling blood pressure.

Acute aortic dissection type A is an extreme emergency requiring surgical intervention if not treated the mortality increases up to 50% within the first 24 hours and up to 75% within two weeks after the onset event [1]

On one hand, aortic dissection can appear in a wide range of presentation such as chest pain simulating an acute myocardial infarction or as a neurological deficit simulating cerebro-vascular accidents each of which has a different treatment as anticoagulation, thrombolytics that can be fatal for AD. On the other hand, less typical presentation can delay the diagnosis increasing the mortality and morbidity especially in patient with painless AD [2-3].

**Corresponding Author:-Karima Bentahar.**

Address:-Cardiology B Department, Ibn Sina hospital –Rabat–Maroc.

A rapid diagnosis and adequate surgery are imperative to optimize outcomes which can also depend on the presence of co morbidities and presence of end organ malperfusion, the extent of the aortic dissection and of course the post operative possible complications .

### Case report :

We report a case of a 45-year-old hypertensive smoking patient, admitted to the emergency department for a sensation of discomfort and a bit of dizziness , with a normal EKG and negative troponin-TEST, on examination the patient had a blood pressure asymmetry, a 5/6 rough ejectional murmur radiating to the vessels of the neck and femoral arteries, echocardiography showed a dissection flap from the ascending aorta to the thoracic aorta and a moderate acute IAO, emergency CT angiography showed a type A aortic dissection from supra aortic trunks to iliac arteries, the patient was transferred to cardiac surgery and was operated immediately with a satisfactory postoperative transthoracic echocardiography and CT angiography control.



**Figure 1:-**parasternal view showing the flap in the aorta suspecting the aortic dissection diagnosis



**Figure 2:-**a ct scan showing the aortic dissection

**Discussion:-**

Generally AD is clinically defined with an abrupt chest pain that radiates to the back, the painless version is less common and not enough suspected. Our case to what we know and limited by our researches is the 88 reported case in the world of the painless AD. The first painless aortic dissection was reported by Cohen et al back in 1964 initially suspected on the presence of aortic regurgitation murmur [4] then Gerber et al reported a silent AD based on acute neurological deficits in 1986 [5]. There is variable information about the incidence of painless AD. In general, AD type A is classified as a rare pathology, with an estimated incidence of pre and in hospital cases of 3-4 cases per 100,000 people per year [6].

On one hand, it is reported to be 6.4% in the international register of AD [7]. Other series reported that up to one third of the patients did not complain of pain upon presentation [8].

On the other hand 5% to 15% of patients with acute aortic dissection present without pain which can cause a delay in the emergency department causing a high risk of mortality [9].

One of the theories of painless acute aortic dissection is that the only innervated layer of the aorta is the adventitia, therefore if the dissection doesn't extend to this layer, there is no pain [10].

Other theories may include elements that can decrease pain stimulation by damaging the adventitia such as advanced age, diabetes, previous aortic surgery or previous aortic aneurysm [5]. A neurological deficit may alter the pain. To help acknowledge more this type of AD, we looked for variable clinical presentation and we found that patients generally present with hypotension which could be secondary to aortic regurgitation generally when the aortic valve is involved [11], cardiac tamponade with high mortality [12] and heart failure [7-13] which confers to a higher morbidity and mortality [14], and then bradycardia due to the involvement of the baroreceptors and also the extent of the dissection to the right common carotid which may cause also syncope [15]. This also explains the high incidence of right hemispheric ischemia and hence left side neurological deficits [16].

At the physical examination, contrary to our case where we found a rough systolic murmur, it is generally a classic aortic insufficiency murmur which was auscultated in 44% of patients with type A dissection [7] and was reported in about one third of the cases reported in the literature. Pulse deficit was found in 15% of the cases [7].

The application of thrombolytics when AD is misdiagnosed with MI can be fatal especially when signs of ischemia are found in the EKG which can be due to the involvement of the coronary ostia [7, 17], or the presence of changes in the EKG related to the signs of left ventricular hypertrophy associated with hypertension.

Transthoracic echocardiography is an available non-invasive and a quick method to help assess the diagnosis of AD especially type A, when assessing the ascending aorta with a higher sensitivity [18] it is also an efficient way to evaluate the aortic valve.

It also can help with the suprasternal view to detect arch involvement and also have a quick view on the carotid to see if there is an extension especially when the patient is presented with neurological deficit [19, 20, 21, 22].

ETT can be as sensitive and specific as computed tomography and magnetic resonance [23] plus the avoidance of contrast dye in patients with kidney disease.

If diagnosed correctly, it can save lives by avoiding applying thrombolytic in patients with AD which has mortality as high as 70% [24].

**Conflict of interest:**

non declared

**Conclusion:-**

The inaccurate use of fibrinolytics was reported in both painless [25, 26, 27] and typical painful AD [28] and resulted in poor outcome and high mortality.

Because of this serious outcome and dark prognosis in patients with type A aortic dissection, predictive tools are a must to help physicians assimilate and predict this pathology to reduce delay and misdiagnosis in emergency department.

### References:-

1. Woo KM, Schneider JI. High-risk chief complaints I: chest pain--the big three. *Emerg Med Clin North Am* 2009; 27:685-712, x. [PubMed].
2. Park SW, Hutchison S, Mehta RH, Isselbacher EM, Cooper JV, Fang J, Evangelista A, Llovet A, Nienaber CA, Suzuki T, Pape LA. Association of painless acute aortic dissection with increased mortality. In *Mayo Clinic Proceedings* 2004 Oct 31 (Vol. 79, No. 10, pp. 1252-1257). Elsevier.
3. Imamura H, Sekiguchi Y, Iwashita T, Dohgumori H, Mochizuki K, Aizawa K, Aso SI, Kamiyoshi Y, Ikeda U, Amano J, Okamoto K. Painless acute aortic dissection-Diagnostic, prognostic and clinical implications. *Circulation Journal*. 2011;75(1):59-66.
4. Cohen S, Littmann D. Painless dissecting aneurysm of the aorta. *New England Journal of Medicine*. 1964 Jul 16; 271(3):143-5.
5. Gerber OD, Heyer EJ, Vieux UL. Painless dissections of the aorta presenting as acute neurologic syndromes. *Stroke*. 1986 Jul 1;17(4):644-7.
6. Nienaber CA, Clough RE. Management of acute aortic dissection. *Lancet* 2015;385:800-1. 10.1016/S0140-6736(14)61005-9 [PubMed] [CrossRef]
7. Hagan PG, Nienaber CA, Isselbacher EM, Bruckman D, Karavite DJ, Russman PL, Evangelista A, Fattori R, Suzuki T, Oh JK, Moore AG. The International Registry of Acute Aortic Dissection (IRAD): new insights into an old disease. *JAMA*. 2000 Feb 16;283(7):897-903.
8. Ayrik C, Cece H, Aslan O, Karcioğlu O, Yilmaz E. Seeing the invisible: painless aortic dissection in the 15 emergency setting. *Emergency Medicine Journal*. 2006 Mar 1;23(3):e24-.
9. Park SW, Hutchison S, Mehta RH, Isselbacher EM, Cooper JV, Fang J, et al. Association of painless acute aortic dissection with increased mortality. *Mayo Clin Proc* 2004;79(10): 1252-7. [PubMed]
10. Wooley CF, Sparks EH, Boudoulas H. Aortic pain. *Progress in cardiovascular diseases*. 1998 Jun 30;40(6):563-89.
11. Rahmatullah SI, Khan IA, Nair VM, Caccavo ND, Vasavada BC, Sacchi TJ. Painless limited dissection of the ascending aorta presenting with aortic valve regurgitation. *The American journal of emergency medicine*. 1999 Nov 30;17(7):700-1.
12. Isselbacher EM, Cigarroa JE, Eagle KA. Cardiac tamponade complicating proximal aortic dissection. Is pericardiocentesis harmful?. *Circulation*. 1994 Nov 1;90(5):2375-8.
13. Liu ZY, Zou YL, Chai BL, Zeng HS. Analysis of clinical features of painless aortic dissection. *Journal of Huazhong University of Science and Technology [Medical Sciences]*. 2014 Aug;34:582-5.
14. Tsai TT, Bossone E, Isselbacher EM, Nienaber CA, Evangelista A, Fang J, Smith DE, Cooper JV, Hutchison S, O'Gara P, Eagle KA. Clinical characteristics of hypotension in patients with acute aortic dissection. *The American journal of cardiology*. 2005 Jan 1;95(1):48-52.
15. Asouhidou I, Asteri T. Acute aortic dissection: be aware of misdiagnosis. *BMC research notes*. 2009 Feb 20;2(1):1.
16. Matsuo H. Clinical significance and impact of "painless" acute aortic dissection. *Circulation Journal*. 2011;75(1):47-8.
17. Wang JL, Chen CC, Wang CY, Hsieh MJ, Chang SH, Lee CH, Chen DY, Hsieh IC. Acute Type A Aortic Dissection Presenting as ST-Segment Elevation Myocardial Infarction Referred for Primary Percutaneous Coronary Intervention. *Acta Cardiologica Sinica*. 2016 May;32(3):265.
18. Baliga RR, Nienaber CA, Bossone E, Oh JK, Isselbacher EM, Sechtem U, Fattori R, Raman SV, Eagle KA. The role of imaging in aortic dissection and related syndromes. *JACC: Cardiovascular Imaging*. 2014 Apr 1;7(4):406-24.
19. Sakamoto Y, Koga M, Ohara T, Ohyama S, Matsubara S, Minatoya K, Nagatsuka K, Toyoda K. Frequency and Detection of Stanford Type A Aortic Dissection in Hyperacute Stroke Management. *Cerebrovascular Diseases*. 2016 Apr 13;42(1-2):110-6.
20. Klompas M. Does this patient have an acute thoracic aortic dissection?. *Jama*. 2002 May 1;287(17):2262-72.
21. Ohara T, Koga M, Tokuda N, Tanaka E, Yokoyama H, Minatoya K, Nagatsuka K, Toyoda K, Minematsu K. Rapid Identification of Type A Aortic Dissection as a Cause of Acute Ischemic Stroke. *Journal of Stroke and Cerebrovascular Diseases*. 2016 May 10.

22. Neskovic AN, Hagendorff A, Lancellotti P, Guarracino F, Varga A, Cosyns B, Flachskampf FA, Popescu BA, Gargani L, Zamorano JL, Badano LP. Emergency echocardiography: the European association of cardiovascular imaging recommendations. *European Heart Journal-Cardiovascular Imaging*. 2013 Jan 1;14(1):1- 1.
23. Ranasinghe AM, Bonser RS. Biomarkers in acute aortic dissection and other aortic syndromes. *Journal of the American College of Cardiology*. 2010 Nov 2;56(19):1535-41.
24. Kamp TJ, Goldschmidt-Clermont PJ, Brinker JA, Resar JR. Myocardial infarction, aortic dissection, and thrombolytic therapy. *American heart journal*. 1994 Dec 31;128(6):1234-7.
25. Grupper M, Eran A, Shifrin A. Ischemic stroke, aortic dissection, and thrombolytic therapy—the importance of basic clinical skills. *Journal of general internal medicine*. 2007 Sep 1;22(9):1370-2.
26. Fessler AJ, Alberts MJ. Stroke treatment with tissue plasminogen activator in the setting of aortic dissection. *Neurology*. 2000 Feb 22;54(4):1010-.
27. Uchino K, Estrera A, Calleja S, Alexandrov AV, Garami Z. Aortic dissection presenting as an acute ischemic stroke for thrombolysis. *Journal of Neuroimaging*. 2005 Jul 1;15(3):281-3.
28. Marian AJ, Harris SL, Pickett JD, Campbell E, Fromm RE. Inadvertent administration of rtPA to a patient with type 1 aortic dissection and subsequent cardiac tamponade. *The American journal of emergency medicine*. 1993 Nov 30;11(6):613-5.