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Traumatic Break of the Ascending Aorta: About a Case

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Abstract

The traumatic break of the ascending aorta is rare. We bring report the case of a 40-year-old man, a victim of accident of the public highway having caused a break of the posterior face of the ascending aorta. The explorations scanno graphique and per operating highlighted this break. The treatment consisted of an edge-to-edge direct suture of the ascending aorta.

Keywords

Traumatic Break, Ascending Aorta, Accident of the Public Highway

1. Introduction

The traumatic break of the thoracic aorta (RTA) establishes a medical surgical urgency among which the morbidity and the mortality remain still raised in spite of important progress [1]. The accidents of the public highway establish the first cause of RTA especially with the increase of driving speeds. The second big cause is the fall of a big height consecutive to occupational accidents or of defenestration [2]. It is the pathology which affects preferentially a young, mainly male population [3]. From the topographic point of view, the aortic isthmus, is widely dominant (90% - 98%) [4] [5]. The ascending aorta is more rarely concerned. We bring report the case of a 40-year-old man, a victim of an accident of

the public highway, having caused a polytraumatisme with to the thoracic level a break of the ascending aorta.

2. Observation

It is about a 40-year-old man, a driver of motorcycle, a victim of an AVP motorcycle VL with high kinetics with frontal impact and antero-posterior thoracic compression.

In the admission, the patient was conscious with a score of Glasgow in 15/15, polypnéique tachycardia and unstable on the hemodynamique plan.

The clinical examination highlighted pains in the palpation of the breastbone, the right collarbone and the right hemi thorax with emphysema under cutaneous. There was also a palpatoire pain at the level of the hypochondria and of the custard tart right.

An abdominal ultrasound showed an effusion of low abundance at the renal died level with bladder full of hematiques urines.

A thoraco-abdominopelvien scanner highlighted at the thoracic level a fracture of the manubrium sternal with effusions pericardique and mediastinal not compressif, a pneumo mediastin, with image of traumatic aneurysm of 2, 2 cms at the level of the posterior wall of the ascending aorta (**Figure 1**).

It also showed a fracture of the not uncalled-for left collarbone, a fracture of the quotations K3 to K5 posterior unifocales without shutter, to the right with bilateral lung bruise of the right upper and lower lobes, a left hemothorax of low abundance. At the abdominal level, there was a straight hepatic bruise without active bleeding, a superior polar fracture of the right kidney with a périrrénal bruise and an arterial blusher.

In front of this break traumatic comment of the later face of the ascending aorta, the surgical treatment by sternotomie was envisaged later arterio-embolisation renal.

Per operating the exploration highlighted: a clear and complete tear of the aortic wall of 3 cms, horizontal, in 1 cm above the Sino-tubular junction compared to the left ostium, the venous bleeding over the beginning of exclusion between the superior vena cava and the right earphone and the tear of the pericardia about 10 cms going of the left superior pulmonary vein to 1 cm of the edge free of the pericardia compared to the trunk of the lung artery. The coronary ostia was clear and the aortic valve was fine without tear.

We realized:

- after section of the aorta and the regulation of edges an edge-to-edge suture of the ascending aorta by hémisurjets two of proline 4/0.
- The repair of the exclusion of the superior vena cava by two points of proline felted 4/0 and of the pericardia by an over sewing of vicryl 2/0.

The total time of the CEC was of 81 minutes, the duration of the aortic clam page of 26 minutes and the lowest temperature of 34. The operating consequences were simple with exit of the patient to operating J17 comment.

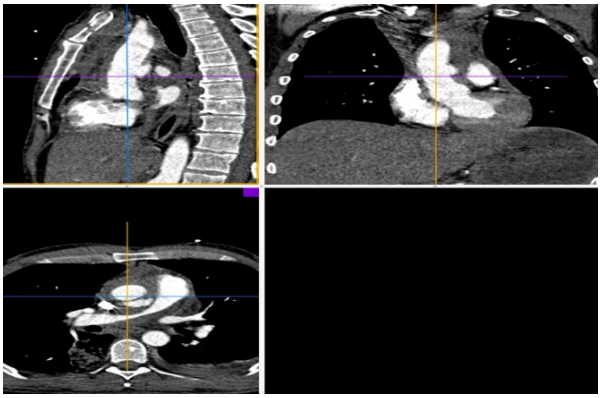

Figure 1. Thoracic CT after injection of the contrast product in axial and sagittal section showing a traumatic aneurism image of 2.2 cm at the posterior wall of the ascending aorta.

A clinical surveillance and scannographique was recommended for the hepatic and lung bruises.

3. Discussion

The traumatic breaks of the aorta are the most frequent hurts of the big vessels of the mediastina [1]. The only forward-looking study realized by Fabian and al [6] showed that approximately 15% to 23% of the victims of the road accidents die every year of a traumatic break of the aorta. A percentage from 80 to 85 died immediately on the scene from the accident, during the transport or in emergencies [7] [8].

The mechanisms which come into play in the traumatic hurts of the thoracic aorta are mainly bound to the deceleration or to the acceleration, pulling the laceration of the wall at the level of the zones of transition between the mobile aorta and the stiffer or fixed aorta [8] [9] [10]. So, the aortic isthmus is the most frequent location of the traumatic breaks of the aorta, it represents 90% to 98% of the cases in the surgical series and 45% in 65% of the cases in the autopsiques series [4] [5]. The downward thoracic distal aorta is the second location in frequency 7 in 12%. The multiple locations: isthmus + downward aorta distal or isthmus + aortic bow are also possible. The location at the level of the ascending aorta is rare, arising only in 0% - 3% of the cases. In this particular case, our patient presented a horizontal, net and complete break of the posterior aortic wall of 3 cms, in 1 cm above the Sino-tubular junction compared to the left ostium.

The stake is not to underestimate this rare location of post-traumatic break of the thoracic aorta by analyzing systematically all the aortic axis.

The diagnosis of RTA widely benefited from the generalization of the scanning (TDM).

The direct signs suggestive of break of the aorta whatever is the topography are the mediastinal bruise in continuity with the aorta, the false aneurysm, the irregularity of the aortic outline, and the flap intimal [7]. In our case, there was a flap intimal at the level of the ascending aorta.

The RTA becomes integrated generally within the framework of a polytraumatism and there are often hurts of the other organs associated. The cranial and abdominal traumas are most frequently associated and in 25% of cases, these hurts also justify a surgical operation as a matter of urgency. The problem of hierarchical organization of the therapeutic gestures often leaves the perplexed surgeon. These associated hurts influence the global forecast because of their appropriate gravity and/or of their potential worsening by the aortic clam page and the heparinisation.

Seen the instability hemodynamique in the admission and during the evolution, a surgical treatment by sternotomie was realized as a matter of urgency later renal arterio-embolisation by direct suture of the break with a good evolution on a backward movement of 11 months. As for the foyers of hepatic and lung bruises, a conservative treatment was envisaged with favorable evolution on the clinical and radiological plan.

4. Conclusion

The break post-traumatic of the ascending thoracic aorta is rare but should not be underestimated and is to be systematically looked for. His diagnosis was improved by the progress of the radiology, in particular the angio scanner as well as the forecast thanks to the speed of the transport towards specialized hospitable structures and the precocity of the coverage.

Conflicts of Interest

We, authors of this article declare that there is no conflict of interests.

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