preoperative and intraoperative risk factors that
influenced the surgical mortality, such as: older age,
renal failure, preoperative hemodynamic instability,
preoperative cardiopulmonary resuscitation, and lack
of retrograde cerebral perfusion (2-4).

In recognition of these multiple and complex aspects,
it is not possible to apply an oversimplified view with
stereotype in the clinical and pathological aspects of
the aortic dissection.

On the other hand, several questions appear when
the great complexity of this pathology is understood:
a) In-patients with severe complications the statistical
global data show the high mortality and morbidity in the
short-term. However, there can be observed a great evolutive
uncertainty in each patient in particular.
b) Today there are a lot of patients with aortic
dissection that die without being clinically suspected of it
in highly experienced hospital centers (See: Items 2:
Complex aspects of the pathology in the aortic dissection).
c) The highly-trained physician has some doubt about
the amount of patients who die before arrival in hospi-
tal, as well as about the amount of those who haven’t
even been suspected of the disease.

There are various works that show the great complexity
of the aortic dissection: a) type of dissection division
(proximal and distal); b) temporary stage (acute, subacute
and chronic); c) groups and subgroups/subsets of different
types of dissection, considering the anatomic sectors
involved; d) the enumeration of preexistent cardiovascular
pathologies and other extra-cardiac diseases; e) classification
according to age range, type of aortic dissection, number
and severity of complications secondary to aortic dissection;
f) post-therapeutic evolution of this group and subgroups.

Haverich et al (5) found in patients with acute aortic
dissection a major number of segments involved in
relation to chronic aortic dissection. Perhaps, the
natural selection processes in those patients with less
aortic segments involved survived the acute aortic
dissection and are referred for evaluation and surgery
at the chronic stage.

2- COMPLEX ASPECTS OF THE PATHOLOGY IN THE AORTIC DISSECTION

- Findings of aortic dissection in autopsies and
  failed clinical diagnoses.
- Non-specific histological pattern in aortic
dissection.
- Variants of aortic dissection.
- Severe atheromatosis and aortic dissection.

- FINDINGS OF AORTIC DISSECTIONS IN
  AUTOPSIES AND FAILED CLINICAL DIAGNOSES.

Today Sir William Osler`s phrase is valid “There is
no disease more conducive to clinical humility than
aneurysm of the aorta” (6,7).

From fifty autopsies of patients with proximal aortic
dissection reported by van Arsdell et al (8), 58% of the
patients did not undergo surgery (it is unclear if it was
due to misdiagnosis or death before reaching the operating
room). Besides, Roberts and Roberts (6,9) published
that half the patients with aortic arch dissections died
before being diagnosed; meanwhile, Jamieson et al (10)
found that one third of patients died before being diagnosed
and in 28% of the patients the correct diagnosis was not
made before autopsy in the Mayo Clinic experience (11).

The new technologies should be used advantageously
to obtain valuable information in patients with or suspected
aortic dissection. However, there remains a high percentage
of clinically unsuspected patients. A possible solution to
improve the diagnosis accuracy applied in all patients is a
complete clinical history and physical examination, plus a
suspected routine in this pathology.

A hospital center with greater experience in both
clinical and surgical aspects of aortic dissection has major
possibilities to make a correct diagnosis than other centers
with minor experience. Besides, these possibilities of
satisfactory diagnosis increase in physicians with high
experience and training in this pathology.

- NON-SPECIFIC HISTOLOGICAL PATTERN AND
  UNCLEAR MECHANISM IN AORTIC DISSECTION.

Schlatmann and Becker (12,13), broke the mythical
association between specific alterations of the medial layer
of the aortic wall and aortic dissection. They could
demonstrate that aortic dissection has unspecific alterations
in the layer media of the aortic wall. Today the mechanism
of the classical aortic dissection remains unclear.
• **VARIANTS OF AORTIC DISSECTION.**

Although aortic intramural hemorrhage was described by Krukenberg in 1920, their true importance has been given from 1990. The aortic dissections originated in aortic intramural hemorrhage or in atherosclerotic ulceration are denominated “variants of the aortic dissection” (See chapters 15, 16, 27 and 29).

• **SEVERE ATEROMATOSIS AND AORTIC DISSECTION.**

The aortic dissection may constitute a process complicating atherosclerotic ulcers. On the other hand, classical aortic dissections were associated with different grades of atheromatosis and distinct behavior in relation to the propagation of the dissection.

The pathologic studies of surgical specimens and a few cases of necropsy with aortic dissection demonstrated that the aortic wall has associated process of atheromatosis in 36% of patients (22% moderate grade; 14% severe grade) (14). With cineangiography it was detected in 17% of the cases (14) (Fig. 3-a in chapter 9). The severe alterations or atrophy in the middle layer block the advances of aortic dissection (Figure 3-b in chapter 9) (15). However, in other cases, the propagation of aortic dissection is not blocked in segments with severe atheromatosis. The advance of dissection through these segments is very tortuous and the possible reason is that it chooses the circumference of the aortic wall with minor alterations in the middle layer (fig. 9. See chapter 9, fig. 3b).

### 3- CARDIOVASCULAR PATHOLOGIES PRE-EXISTENT TO THE AORTIC DISSECTION

- **Pre-existent pathologies:**
  - clinical and angiographic findings.
- **Pre-existent cardiovascular surgery.**

- **PRE-EXISTENT PATHOLOGIES: CLINICAL AND ANGIOGRAPHIC FINDINGS.**

In 32% of the patients with aortic dissection a severe elongation of the thoracic aorta was detected. Besides, in 18% of the patients there existed modifications of the aortic valve plane with an angle greater than 40° (figure 19, chapter 1)(Table 10, chapter 9).

True aortic aneurysms were associated in 5.7% of all cases (8 patients with AAA and three with thoracic aortic aneurysms)(Fig. 7, chapter 9).

The pathological study of the anatomical piece extirpated during surgical procedures and a few cases of necropsy demonstrated that the aortic wall underwent a process of atheromatosis in 36% of the patients (22%: moderate grade; 14% severe grade); with cineangiography this process was detected in 17% of the cases (See chapter 17, fig. 17). Severe alterations or atrophy in the middle layer block the progression of the aortic dissection (15). However, in other cases, the aortic dissection advances in an antegrade or retrograde manner in segments with severe atheromatosis having a tortuous path (fig. 9. See chapter 17 fig. 15).

In the patients with aortic dissection the following preexistent cardiovascular pathologies were detected:

a) Hypertension in 79% of the cases (type I-II: 76.5%, and type III: 85%);

b) Coronary Artery Disease (CAD) in 25% (48 patients with coronarioangiography, 10 patients with prior angiography, and 3 patients in necropsy). Normal coronarioangiography: 27% of all patients (66 patients), and unknown in 48 % of all patients (116 patients).

Other cardiovascular disorders were:

- c) Chronic heart failure: 8.6%;
- d) Chronic myocardial infarct: 4.5%;
- e) Chronic and severe mitral regurgitation: 2 cases;
- f) Intermittent claudication by chronic occlusive diseases of peripheral arteries: 5 cases.
- g) Valvular aortic stenosis (VAS) was associated with aortic dissection in 13 patients (5.4%). Seven patients had undergone aortic valve replacement (AVR) prior to the event of aortic dissection and one patient had developed VAS between the first and the second event (2 years) of aortic dissection.
- h) Aortitis giant cells: 1 case.

- **PRE-EXISTENT CARDIOVASCULAR SURGERY**

In our series (178 patients), preexistent cardiovascular surgery involved 16 (9%) (Table 1).