

# Endovascular treatment: the role of the radiologist

*Tratamento endovascular: o papel do radiologista*

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A fast search on the PubMed site in September 29, 2010 with the words “Cardiovascular imaging”, covering a ten-year period, revealed 12,560 articles. By limiting the search to 2010 alone, 1,489 scientific articles were found. With these surprising figures, one can conclude that this is the greatest advance in developments in the field of cardiovascular imaging ever achieved in medicine.

This increasing interest is based on three factors as follows: a) major companies invest in this field placing their bets on the expectations that technological success will yield incalculable profits; b) research laboratories seek to improve technical procedures, endoprosthesis materials and patients’ prognosis in the process of validating clinical studies; and c) physicians, clinics and hospitals, whether public or private, that must understand the struggle between profit and “reality”.

We could take advantage of the present editorial to describe the different aspects of such developments, however it will only be focused on the radiologist’s role.

In 2003, Mavroforou et al.<sup>(1)</sup> highlighted the relevance of good practice in interventional radiology, based on compliance with the legislation and on the discussion of all the aspects with the patients and their families. Thus, those practicing non-invasive radiology, besides the patient himself, will face constant interference of the assisting physician in the practice, which will pose dilemma situations between common sense and medical ethics.

The radiologist must dedicate himself to deeply understand the physiology and pathology of every disease, but currently the control of the effects of the human interference in this process is fundamental. The attempt to change the natural course of a vascular disease with interventional radiology may be successful or not. Thus, those who qualify to investigate cardiovascular diseases must understand the relevant role of noninvasive imaging

methods in the follow-up of both successful and unsuccessful treatments.

A global increase has been observed in the accuracy and application of these methods for detection of disease, follow-up and planning of endovascular procedures. Thus, interventional procedures can be more appropriately planned and definitely established after accurate measurements, facilitating the selection of the material and endoprosthesis to be utilized.

The present issue of **Radiologia Brasileira** includes an excellent article demonstrating the relevance of the imaging diagnosis in the classification of endoleaks as a complication of endovascular treatment for aortic aneurysms<sup>(2)</sup>. This is one of the most relevant themes concerning noninvasive vascular imaging, and demonstrates the need for comprehensive knowledge by the radiologist on the aspects that should be selected and reported in an investigation following a treatment with vascular endoprosthesis.

Technological developments of endoprostheses with fenestrated and branched systems have allowed the increase in indications of this type of treatment in previously unfavorable situations. It is the radiologist’s role to detect and report the actual status of the disease in order to allow the performance of the procedure, if applicable, or at least the questioning of such procedure in cases where it is not indicated.

With the arrival of innumerable multidetector computed tomography units into the country, and with the necessity of keeping pace with technological developments, the radiologist must grasp a comprehensive knowledge on noninvasive vascular imaging methods. With a greater experience in the utilization of such methods, an exponential decrease in the rate of misdiagnoses and failure in the detection of complications should be observed.

These publications and discussions are of paramount importance, as the radiologist’s role will be increasingly questioned if this professional does not adopt a position compatible with the relevance of these imaging methods

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in the management of patients. Besides reporting the measurements, characteristics and aspects of the findings, it is an exclusive responsibility of the radiologist to classify vascular alterations under the same terminology utilized by vascular physicians, surgeons or practitioners working in this field of medicine.

Some additional data reported in the recent literature corroborate the above considerations.

Amiot et al.<sup>(3)</sup> have published an article describing a French 16-center experience with the utilization of fenestrated endoprostheses for the treatment of aortic aneurysms. The conclusion of such study demonstrates the medium-term effectiveness of the endovascular treatment and highlights the necessity of detecting ostial obstructions in aortic branches or endoleaks and aneurysms, since these findings and worsening in the disease progression are strongly associated with increase in complications and mortality rates.

Antoniou et al.<sup>(4)</sup> have studied a hybrid approach associating surgical and endoluminal treatment of aortic aneurysms. Such study specifically approaches the aortic arch and demonstrates that the association of these two interventions might be a useful alternative with acceptable short-term results. In another study, the same authors<sup>(5)</sup> had already highlighted the utilization of robotic surgery with increase in the effectiveness of this minimally invasive approach.

Another interesting 13-center study that has also been developed by a French group, Haulon et al.<sup>(6)</sup>, demonstrated the medium-term safety of endoprosthesis for patients at high risk for aneurysms rupture.

One of the best studies is described in a review article developed by Jim & Sanchez<sup>(7)</sup> demonstrating that the correct selection of patients and an appropriate deployment of the endoprosthesis in the diseased segment will result in low procedural mortality (< 2%) and a high capacity of avoiding long-term aneurysmal rupture or related complications (cerebrovascular accident – CVA, for example) or conversion of the procedure into surgery.

In cases of more debilitated patients for whom, many times, the procedure is the sole treatment option considering the contraindication for application of anesthetics and surgery, studies like the meta-analysis developed by Koullias & Wheatley<sup>(8)</sup> may be adopted as a reference. By evaluating a sample of 463 patients, these authors have observed a mortality rate of 8.3% in 30 days, with an incidence of endoleak in 9.2%, CVA in 4.4%, and paraplegia in 3.9%

of the patients. In this group of patients, the results were better than the ones observed in the group submitted to open surgery.

Because of its simplicity and short learning curve, computed tomography will allow an expansion in the noninvasive cardiovascular imaging techniques in our country, and has also been utilized in the pre- and post-treatment evaluation of traumatic aortic lesions. Morgan et al.<sup>(9)</sup> have clearly demonstrated this application of the angiographic study, highlighting the role of this method as an ancillary tool in the interpretation of cardiovascular findings by the radiologist.

The daily practice should be based on clinical studies like those developed by Qu & Raithel<sup>(10)</sup>, Rodel et al.<sup>(11)</sup> and Torsello et al.<sup>(12)</sup>. The knowledge and awareness of these results can address our day-to-day doubts.

Finally, I would like to congratulate the authors Chagas Neto et al.<sup>(2)</sup>, highlighting the relevance of this type of publication in **Radiologia Brasileira**.

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