



Heart Transplantation, Less Frequent but More Advisable Endomyocardial Biopsy

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Editorial

In spite of recent rapid progression in immunologic aspects of organ transplantation and introducing new immunosuppressive drugs to market, allograft rejection is still considered a life threatening intricate in early and long term course. A careful and scrupulous donor and recipient selection, obsessive donor management before organ procurement and acceptable ischemic time have important roles in this well-organized multidisciplinary process.

Although Endomyocardial Biopsy (EMB) is still considered a gold standard in detection of allograft rejection, but it isn't cost-effective, is associated with specific complications and inconvenient for patients. EMB specimen should be obtained and processed appropriately and any fault can affect the correct histopathologic interpretation. The most commonly encountered specimen artifacts which can work as a misleading factor for clinician are shown in Table 1 [1].

Diagnosis of allograft rejection remains a major concern in heart transplant recipients. Currently, EMB is the gold standard for detecting rejection. Although EMB is considered a safe procedure; but is associated with known complications. Complications during biopsy included arrhythmia (0.25%), conduction abnormalities (0.2%), coronary artery fistula formation in (2.9%), flail tricuspid leaflets following biopsy (6% to 14%) and very occasional cases of hepatitis B transmission have been reported [1].

Likewise there are still a lot of other studies, opponents and proponents of surveillance EMB after heart transplantation. Nevertheless, there is no any consensus about a unique and noninvasive method, so EMB is still considered gold standard in follow-up surveillance.

There is active research attempting to identify less invasive and potentially more accurate methods to identify transplant rejection. Electrocardiographic, and Magnetic Resonance Imaging (MRI) measures have been studied as early indicators of rejection, but none have proved sensitive or specific enough in validation studies when compared with EMB. A number of biomarkers have been investigated in the search for a reliable serologic marker for transplant rejection. These include elevated troponin levels, Brain Natriuretic Peptide (BNP), C-reactive protein and soluble interleukin-2 receptor levels. Recently, gene expression profiling of peripheral blood lymphocytes has generated the most excitement.

With contemporary immunosuppression, acute cellular cardiac allograft rejection continues to occur with highest incidence during the first post-transplantation year. The majorities of rejection episodes occur in the absence of clinical signs and symptoms or graft dysfunction. Therefore, a multimodal approach to rejection surveillance that incorporates thorough clinical assessment, echocardiographic visualization of graft function, Gene Expression Profiling (GEP) of peripheral blood leukocytes, and EMB is used to rule out/identify clinically significant rejection episodes.

The usual surveillance course although is variable center to center, includes EMB of the right ventricle weekly for the first month, once or twice monthly for the next months, and then on a three- to six monthly, sometimes annual basis. The incidence of acute rejection decrease significantly more

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Table 1: Specimen artifact which may work as a misleading factor.

Specimen artifact	Description
Drying artifact	From a delay in fixation.
Crush artifact	Related to procedure itself.
Contraction band artifact	Which is a spasm of myocardial fibers that occur at the time the biopsy performed, this type of artifact indicate myocyte injury and often necrosis in a biopsy which isn't a true necrosis.
Quilty effect	Is an endomyocardial infiltrate, composed primarily of B and T lymphocytes and scattered macrophages that has been shown to be associated with use of cyclosporine.

than 3 months after transplantation and after 9 months only 2.5% of EMB's will show rejection [2].

Unfortunately, there is a high degree of inter-observer variability in the grading of the biopsy results [3] and rejection can occur in the setting of apparently normal biopsy results [4]. Furthermore, sampling error from random biopsies can miss areas with the most severe significant rejection.

Therefore, although EMB is still considered gold standard, nevertheless I believe that it should be done less frequent and more clinically advisable in routine postoperative surveillance.

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