Chronic endometritis and the plasma cell, fact versus fiction

The concept of chronic endometritis as relates to infertility has been documented in the literature since the 19th century. However while the disease process of chronic endometritis is clinically important, a definitive definition has been elusive. One can argue that the following statement by Drs. Archibald Donald and W. Fletcher Shaw (1) in 1911, is as relevant today, as it was back then.

> In the whole domain of gynecology there are no cases so common as those which generally go by the name of "chronic endometritis." This term has been commonly used to denote a class of cases which are well known clinically but difficult to define. That the whole subject is still in a state of confusion is apparent to every one whose duty it is to try and given a clear account of minor gynecology to medical students. At the present time, one turns in vain to the pathologist for the light. Nevertheless, we propose in this condition to continue the use of the name "chronic endometritis" with definite statement at the outset that we do so merely as a matter of convenience.

While it is the goal of the pathologist to provide the light for the clinician in the case of chronic endometritis, there still remains no universally accepted definition of chronic endometritis. A long held belief is that the diagnosis of plasma cell(s) is/are required for a diagnosis of chronic endometritis. This stems from the seminal work of Hitschman and Adler (2) in 1907, in which the presence of the plasma cell, is used as the sole criterion for a diagnosis of chronic endometritis, as the presence of the plasma cell in the endometrium was found in association with inflammatory adnexal disease, in endometritis postpartum, and postabortum, with retained products, and in secondary infections. However, while most consider the plasma cell as necessary for the diagnosis of chronic endometritis, some have questioned this notion, as it has been felt that the presence of sporadic or scanty plasma cells have been identified in endometrium, judged on histological grounds to be normal (3). As a result some authors have argued that a diagnosis can only be made based on additional pathologic findings, even in the absence of plasma cells on the basis that a disease state such as chronic endometritis would logically have a constellation of stromal and glandular findings, including: superficial stromal edema, increased stromal density, spindled stroma, and polymorphic inflammatory cells, commonly associated with plasma cells, in an endometrium in which a cyclical date may be altered, patterns, which were fully described by Greenwood and Moran in 1981 (4).

It is felt that an exhaustive search for plasma cells may not need to be done in the absence of these secondary characteristic findings. This may have important ramifications in the current time, as sensitive techniques used to identify plasma cells, such as immunohistochemistry for CD138, may overestimate the incidence of chronic endometritis, if the presence of plasma cells is used as the sole criterion for a diagnosis of chronic endometritis. Additionally the use of immunohistochemical staining as the sole criterion for a diagnosis is also problematic, as the endometrial stroma in the proliferative phase, the endometrial glands in the secretory phase, squamous epithelium either as metaplasia or as a cervical contaminant, and trophoblasts such as are seen in current or from past implanatations, all can stain positively for CD138 immunohistochemistry. Plasma cells are quite often seen in the stroma of the cervix. Therefore, while CD138 staining is quite helpful in identifying possible plasma cells, one must be careful, and confirm that the cells staining have the morphologic appearance of a plasma cell, are seen in endometrial tissue, and are associated with the previously described stromal and glandular changes, before a diagnosis of chronic endometritis is made.

However, a challenge that still exists is whether a specific quantity of these changes is needed to be reflective of a disease state in which treatment may be more likely to be effective in improving fertility, as the changes seen may be focal, or more diffuse, and the volume of tissue for assessment is variable. So it was with great interest in which I read the article by Liu et al. (5). The use of analytic software seems promising, particularly as relates to volume and density, in helping to further characterize the presence of plasma cells in the endometrium, and in further refining the definition of chronic endometritis, although the pathologist needs to review the actual slide for accuracy of staining. Hopefully with continued study, and with the use of ancillary techniques, such as been suggested by Liu et al. (5), we will be able to determine fact from fiction, with regards to the plasma cell and chronic endometritis, and ultimately be able to establish a universally accepted definition for chronic endometritis.

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