Cytology of Inflammation

Inflammatory cells are fairly easy to identify in cytologic samples, since many of them are also found in peripheral blood. If most cells are inflammatory, then the specimen can be categorized as representing an inflammatory process, but it is also helpful to determine the cause of the inflammation.Acute inflammation involves mostly neutrophils. Although bacteria are the most common cause, other causes, such as strongly irritating agents, can also result in primary neutrophilic responses.The morphologic characteristics of the neutrophil can also provide clues about the cause. Neutrophil degeneration is usually, but not always, associated with bacterial infection. Although acute inflammation with the presence of eosinophils suggests hypersensitivity, eosinophils are typically not helpful in identifying a specific cause. A mixed population of cells (macrophages and neutrophils) is suggestive of chronic inflammation that is still active; although the classification is arbitrary, most cytologists classify a combination of macrophages and neutrophils as mixed or chronic-active inflammation if neutrophils make up 50% to 70% of total cellularity.Bacteria, fungi, and foreign bodies can all elicit this type of response. Chronic inflammation is characterized by a predominance of mononuclear inflammatory cells. Low-grade irritants, such as inert foreign bodies or some fungal organisms,may stimulate this type of response.The presence of macrophages is not always an indicator of a chronic condition because some organisms, such as Mycobacteria, can elicit a significant macrophage response. Pure or primary lymphocytic inflammation is uncommon but is seen occasionally. A specific cause is rarely identified.

COMMENTARY: Cytologic examination of specimens is a very useful tool for practitioners. In most cases samples can be collected and evaluated while the patient is still in the exam room.Being able to quickly differentiate inflammation from neoplasia can be very helpful in determining what diagnostic steps to take next or what therapeutic path to follow.—*The Editors*

Cytology of inflammation.DeNicola DB.PROC NAVC 2006, pp 291-293..