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**Body Fluid Photographs**

**CMP-10**

(CSF FLUID, CYTOCENTRIFUGE, WRIGHT-GIEMSA, 100X)

**CMP Participants**

**Performance**

**Identification No. % Evaluation**

Erythrocyte, nucleated 2393 66.7 Educational

Degenerating cell, NOS 1078 30.0 Educational

The arrowed cell is a degenerated/degenerating neutrophil, as correctly identified by 30% of participants.

Degenerated neutrophils are round to oval cells ranging from 10 to 15 μm, and their N:C ratio is 1:3 or less.

The major distinguishing feature is that the nucleus shows karyorrhexis and/or pyknosis. These changes are

appreciated when a cell with neutrophilic granules (pale pink cytoplasm with fine lilac granules) contains a

single, dark, round to oval nucleus (pyknosis) as shown in the arrowed cell, or multiple, unconnected nuclear

lobes (karyorrhexis). The chromatin is dense and homogeneous without visible parachromatin or nucleoli. The

nuclear lobes may fragment into numerous small particles of varying size that can resemble microorganisms

such as bacteria or fungi. Also, the nuclear outlines may become indistinct and blurred. As the cellular

degeneration continues, the cytoplasm will become hypogranulated, then agranular, and the cytoplasmic

borders may become frayed and indistinct. Sometimes, the cells will contain scattered larger azurophilic or

dark blue granules (toxic granulation). Vacuolation is frequent. These cells can be seen both in normal

individuals and in patients with a variety of medical conditions, including infections, inflammatory disorders,

and malignancies. It is nondiagnostic and nonspecific. Other cells that may resemble degenerated neutrophils

are nucleated red cells in the blood and orthochromic normoblasts in the bone marrow. These cell types have

pinkish orange, agranular cytoplasm and a single, often eccentric nucleus with dense chromatin and very little

to no parachromatin.

