

NECROSIS

Necrosis refers to the morphologic changes that follow cell death brought about concurrently by enzymic digestion and denaturation of proteins. The dead cell usually shows increased eosinophilia and may appear more glassy and homogenous than does a normal cell.

In the photo at upper left, from a case of lingual abscess and chronic inflammation, muscle fibers still show preserved outlines but appear swollen and have lost their nuclei and striations. Macrophages will digest the dead muscle. Eventually dense fibrous tissue forms and the architecture is markedly altered. In this example of early necrosis, the tissue later may become semi-liquid. An abscess in the skin provides another example of liquefaction necrosis.

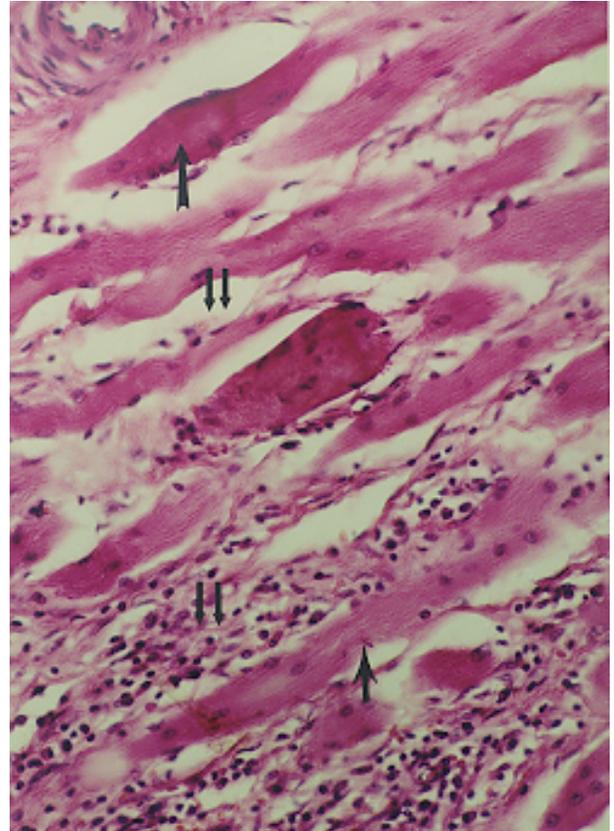
Caseous necrosis is seen primarily in tuberculosis, its name coming from its likeness in the gross specimen to soft friable cheese. In caseous necrosis, unlike coagulative necrosis, the cellular outlines are lost but, unlike the tissue in liquefactive necrosis, the dead cells persist as coarsely granular eosinophilic debris.

Fibrinoid necrosis occurs in walls of injured vessels causing the wall, or parts of it, to stain intensely eosinophilic.

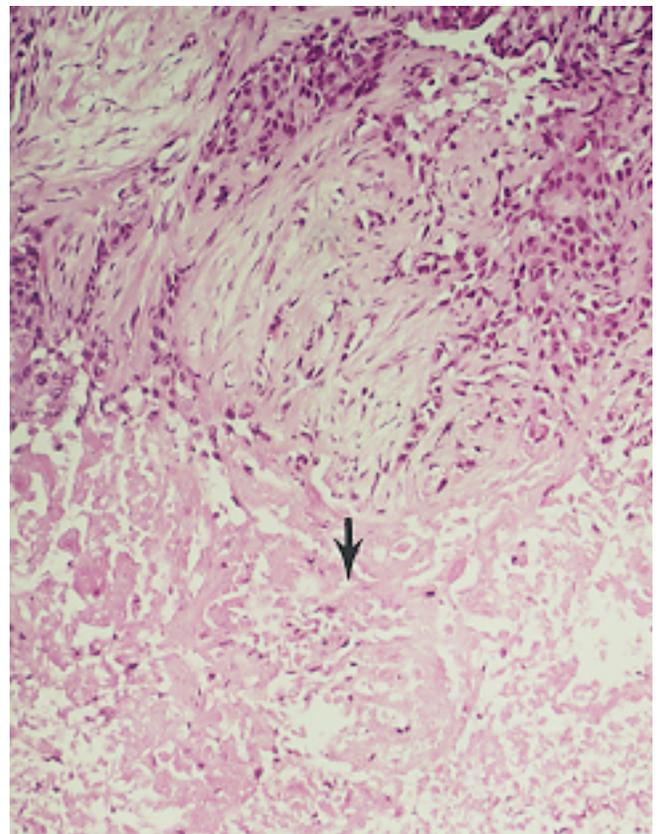
In coagulative necrosis tissue appears as if cooked and microscopically, much of the cellular outline and tissue architecture can still be seen. The commonest cause is ischemia due to occlusion of arterial supply. At first there is clumping of nuclear chromatin and then pyknosis as the clumping becomes more intense with the nucleus staining very dark and shrinking to a small dense mass. If the nucleus breaks up into many smaller fragments scattered throughout the cytoplasm we speak of karyorrhexis.

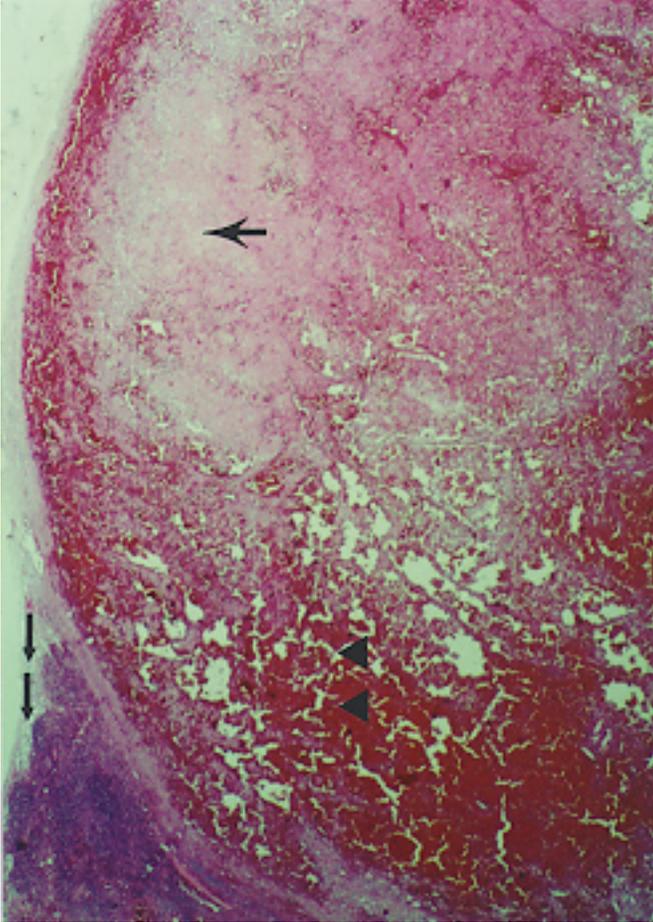
Karyolysis describes chromatin dissolution with progressive loss of staining. Eventually the nucleus disappears.

Necrosis in tongue muscle. Patient had lingual abscess and phlegmon. In this early stage nuclei are largely gone, muscle fibers are becoming indistinct and swollen and look homogenous (large arrows). Chronic inflammatory cells, artifactual spaces, and edema separate muscle fibers (double arrows).



Necrosis (arrow) in area of mucoepidermoid carcinoma. Necrosis is a sign favoring a diagnosis of high-grade tumor. A few pyknotic nuclei remain.





Necrosis, metastatic oncocytic adenocarcinoma, showing hemorrhage (triangles) and necrosis (arrow). Small remaining portion of lymph node is seen in one corner (double arrows).