

from a study of the cells of the exudate, in empyema the stage of doubt is past, we know that the condition is purulent. It is most probable, however, that careful study of the cells will be of importance in aiding us in appreciating the changes which are taking place. That is in the proportion of large mononuclear to polymorphonuclears, the degree of degeneration of the polymorphonuclears both in their nuclei and in their cell. Bernheim has attempted to draw conclusions for diagnosis and prognosis from a chemical examination of the fluid; a low percentage of albumen indicating a protracted course. As yet, however, we have insufficient data for drawing conclusions, and the cellular studies have been directed chiefly to differentiating tuberculous exudates from those due to other organisms or to new growths, in the case of serous or sero-fibrinous effusion.

An examination at autopsy of the pleural cavity of a case of empyema, where the cavity had been unopened, presents all the appearance of an acute fibrino-purulent inflammation. The cavity is filled with a larger or smaller amount of fluid, varying in density from mere opalescence to one heavily loaded with pus cells; these may have dropped to the lower portions, leaving a more or less clear fluid above. The surface of the parietal and visceral pleura is covered with exudate which always contains some fibrin, often a great deal. In older cases organization of this layer of exudate may have taken place and in empyemata of long standing the visceral and parietal pleuræ becomes converted into thick, scar-like masses of fibrous tissue. At the same time the lung will show all the changes due to the accumulation of fluid, from a slight superficial collapse towards the base to complete collapse and compression of the lung, which, in old cases, may represent only a mere rag of deeply pigmented tissue.

Before taking up the question of etiology, I might just touch for a moment upon the changes which may occur should the exudate not be removed by surgical methods or have made a way for itself to the outside (empyema necessitatis).

As will no doubt be pointed out in the further discussion, certain types of empyema may undergo complete absorption and may subsequently leave little trace of their presence. This happy issue depends partly upon the self digestion of the exudate (autolysis) very much also upon the integrity of the absorptive paths, viz., the lymphatics. The character of the infection perhaps also plays a part.

The longer, however, the exudate remains unabsorbed, the more the lymphatics become interfered with, not only by direct extension of the inflammatory process along them, but also by the scar-like masses of connective tissue which forms upon the pleura, so that ultimately a wall