BLOOD CONCENTRATION CHANGES IN INFLUENZA

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From the pathological viewpoint influenza presents a striking similarity to the respiratory complications induced by the lethal war gases, chlorine, phosgene and chlorpicrin. In both conditions there are two features that stand out prominently, namely, pulmonary edema and a pneumonic process. In both, edema may be regarded as the response to an intense inflammatory reaction resulting in a loss of the normal protective mechanism of the upper respiratory tract, thus allowing bacterial invasion of the lung.

It has been shown by Underhill[1] and his associates that in acute poisoning by the lethal war gases edema of the lungs is accompanied by marked changes in the concentration of the blood, which, according to Underhill, is the chief factor contributing to death. Blood concentration means a failing circulation, an inefficient oxygen carrier, oxygen starvation of the tissues, fall of temperature, and finally suspension of vital activities.

During the recent epidemic an opportunity was afforded to study a series of cases of influenza in the New Haven Hospital through the cooperation of Dr. George Blumer and his staff. The investigation with these subjects enables us to state definitely *that in the fulminating cases of influenza there is a marked increase in the concentration of the blood resembling closely that observed in the acute stages of gas poisoning. Death invariably followed a marked increase in blood concentration. Again, of the cases that recovered in not a single instance was there evidence of a significant increase in blood concentration.*

Therefore it is quite apparent that both physiologically and pathologically there is a marked resemblance between influenza and war gas poisoning. Blood concentration in both conditions is an important factor in the cause of death. Blood concentration is incompatible with continued existence.

Under proper conditions, blood concentration changes in influenza may be followed by accurate hemoglobin estimations.

A method of treatment evolved for acute gas poisoning has been applied with success in a few cases of influenza. The method consists in the maintenance of blood concentration as near the normal level as possible by venesection and fluid introduction.

[1] Underhill, *The Lethal War Gases: Physiology and Experimental Treatment*, Yale University, 1920.