THE USE OF DIGITALIS IN PNEUMONIA.

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Much has been written, pro and con, on the use of digitalis in pneumonia. It is not my purpose to review the literature, which is as confusing as anything that can be found in medicine. I shall confine myself largely to a statement of the clinical results following the use of fairly large doses of the drug in this disease as it occurs in private practice. The therapeutic nihilism of the past decade has come to regard as the ideal method of managing pneumonia the do-nothing policy of treating symptoms as they arise. The enormous mortality rates following such a policy is sufficient reason for trying to do something better.

In this disease we have two general indications from start to finish: 1, to get rid of the toxins as far as possible, until Nature is able to furnish her antitoxin; 2, to sustain the heart and circulation, on which the brunt of the attack falls, until the danger is past. If we can accomplish these two results our patient will probably be saved. The only organs at our command to eliminate the toxins are the bowels, skin and kidneys. As in all intoxications, the first two of these should be stimulated to increased action. By proper manipulation and dosage we have in digitalis one of the best diuretics. It not only increases markedly the flow of urine but also, to some extent, the quantity of excrementitious matters.

As to the heart itself, the most important danger is the tendency of failure arising (a) from the action of the poison on the neuromuscular mechanism of the heart, (b) from granular degeneracy of the cardiac muscle under high temperature, probably of minor importance, and (c) from overloading and distention of the right ventricle, consequent on pulmonary obstruction, another factor of minor importance. Associated with this condition of the right side is the venous engorgement and a high degree of arterial anemia. This last fact tells again on the heart itself by diminishing the nutrition of the heart muscle from lack of proper blood supply through the coronary arteries. Now it is a well-established physiologic fact that digitalis slows the heart by lengthening the cardiac diastole and so rests the wearied cardiac muscle; but beyond this it also aids in the direct nutrition of the heart, the blood supply reaching it only through the period of diastole.

The wild claims of Petresco that he could abort pneumonia by large doses of digitalis have never been believed, and have always been quoted in derision of the digitalis treatment. I do not believe that all pneumonia patients can be saved by this drug, but by the judicious use of digitalis we can frequently manage to keep our patient's pulse under 100 per minute. The elaborate statistics published by the Massachusetts General Hospital show that with a pulse under 100 the disease is seldom or never fatal.

It is all right to say: "Do nothing for mild cases—the patients will get well under Nature's care"; but who can say that the patient in the mild case will not get worse and the heart fail? The text-books say: "Give digitalis, when the heart begins to fail." Then it is too late. It requires from twenty to thirty hours before this drug gets a complete hold on the heart. The experiments of Brunton and Cash, made many years ago and confirmed often since, go to show that in the presence of

high temperature the effects of digitalis on the vagus are much less than in normal conditions, but its action on the cardiac muscle itself is not interfered with, so it does not affect the heart so much by its inhibitory action as by direct action on the muscle. As to the dangers of digitalis medication, aside from a marked arrhythmia after the crisis, which is quite often characteristic of the disease itself, I have personally seen no evil results. The symptoms of digitalis intoxication are not usually alarming and can easily be overcome by lessening the dosage.

In preparing any statistics, I am well aware that, in the first four decades of life, croupous pneumonia does not have a very high mortality; certainly after the first year and until the twentieth year the mortality is very low. It is at this time that we are not likely to have complications. The kidneys are healthy and the toxins are readily thrown off. After forty years comes the really severe test of any treatment. We should not properly include in our statistics cases associated with advanced organic disease of some vital organ, because in such cases the lethal issue is due perhaps as much to the organic disease as to the pneumonia, and no remedy could possibly alter conditions.

Bronchopneumonia, although its clinical picture is generally different, is quite often due to the same organism and the general indications of support and eliminations are the same. It is, however, according to statistics, a much more fatal disease. I have collected the statistics separately and together. There was a total of 150 cases. Of these 126 were of the lobar variety; there were twenty-four cases of bronchopneumonia; the ages varied from 2 weeks to 80 years. The fatal cases occurred at the following ages: In lobar pneumonia, at 48, at 60, at 72 and at 80; in bronchopneumonia three cases at 3 years of age, one with asthma and one with measles, and one case (tuberculous) at 75. There were four deaths in each series, a mortality rate of 3.17 per cent. for the lobar variety and 16.6 per cent. for bronchopneumonia, a general mortality rate of 5.53.

The treatment consisted (a) of the uniform administration of quite large doses of some reliable preparation of digitalis, usually the fluidextract, as soon as the diagnosis was made; (b) elimination of the toxins by means of simple diuretics and diaphoretics, the vegetable potash salts, and spiritus ætheris nitrosi; and (c) the use of strychnin, caffein, etc., as stimulation was required. As to the dosage, it must vary with the individual case. A very young adult generally receives three minims of the fluidextract every three hours steadily for days, increasing if the pulse increases markedly; a child of 1 year received from two to four minims of the tincture, or one-half drop of fluidextract, every three or four hours as the case demanded.

These statistics, small in number as they are, represent the wide variations of private practice and cover a period of ten years, so that they do not represent any special season, which often makes a marked difference in our mortality rates. While it is without doubt true that many of these patients would have recovered without any medication, I feel satisfied that a goodly number would have perished without it.

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Danger from Saline Injections in Cholera.—E. J. O'Meara, in the *Indian Medical Gazette*, states that the vitality is so depressed in cholera that there is the greatest danger of cellulitis from saline injection into cellular tissue, no matter how carefully the operation is performed.