

"The Common Cold"

Etiology, Prevention and Treatment*

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IN ALL industries absenteeism on account of sickness is a serious economic problem. In a recent report of the Boston Edison Company covering a period of 10 years, the absences per year on account of sickness were 8.9 calendar days for males and 14 days for females. Among males, sickness caused 12 times as much absenteeism as accidents and the ratio for females was 171 to 1. Respiratory diseases caused nearly one-half of the total number of days lost by men. Out of every 10 men, 4 lost time during the year on account of "common colds." Out of every 10 women, 7 lost time on account of the same cause. Males lost 1.4 days per year and females 2.1 days per year because of colds. Based upon this average, the economic loss caused by "colds," in wages alone, in all the industries of the United States is several millions of dollars and when we also consider the losses due to decrease in efficiency, decrease in production, and the extra expenditures of the invalid, the total is enormous.

There is no medical subject which has greater interest for civilized mankind than that of the "common cold." My experience of many years among the aborigines of the Southwest convinces me that colds, as we know them, are a product of civilization. The layman uses the term "a cold" to cover a multitude of conditions which even the medical man does not always differentiate; viz, an acute coryza; rhinitis; pharyngitis; laryngitis; bronchitis; la grippe; influenza and sometimes tonsillitis.

RESEARCH WORK MEAGRE

There has been a dearth of research work in the etiology of colds, except in an endeavor to prove the theories that a cold was either a primary infection by one or a group of bacteria, or due to a filtrable virus. This lack of research work must be due to the fact that a cold is ordinarily considered a rather trivial affair and one which does not respond readily to treatment but runs its natural course; it cannot be

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due to the apparent economic unimportance of a cold, for statistics show that about 45 per cent of absenteeism in most of our large industries is caused by colds or their sequelae. Where it does not cause absence from work, it materially affects a person's efficiency and, in that way, effects also a great economic loss.

The accepted definition for "a common cold" has been "an acute infection of the nasal and pharyngeal regions, or of the upper respiratory tract"; but no one has been able to demonstrate that any one of the many bacteria normally inhabiting the nasal, buccal and pharyngeal cavities, is the cause of a cold, nor has it been conclusively proved that a group of bacteria is responsible for the symptoms we call "a cold." The infectious origin of a cold is only an unproven theory, and a theory based upon a false premise because in the early stages of a cold the secretions from the nose are always sterile and the organisms usually regarded as being the causative factor are only *secondary invaders* of the latter stages.

Another theory as to the etiology of colds is that of a filtrable virus as brought forth by Kruse in 1914, but this theory was also definitely demonstrated as being untenable through a series of experiments by Robertson and Graves in 1924.

The *International Medical Digest*, January, 1927, says:

Summarizing the present knowledge of the bacteriology of common colds, one must say that, as yet, there has not been found any specific organism that can be considered as the etiological factor. The possibility of a filtrable virus as a specific cause for rhinitis is interesting but, up to the present time, the evidence is too conflicting to accept it as a fact.

It soon becomes apparent that for a proper evolution of the causes for colds, one must go further than the study of the bacteria in the upper respiratory tract.

That is just what I have been doing in my study of colds—going beyond the study of the bacteria in the upper air passages and seeking a systemic disturbance of which the syndrome of a cold is only a local manifestation.

I have never been thoroughly satisfied that a cold was only a trivial affair and was primarily an acute infection of the upper respiratory tract. For the past 11 years, I have been making an intensive study of colds, their etiology, their course, both with and without treatment, and the after results or sequelae.

COLD IS NOT INFECTIOUS

The first thing that I want to oppugn is that "a cold is an acute infection." I have been able to disprove this by experiments on a number of people free from cold by trying to inoculate them with the secretions of an individual suffering from an acute cold. As infectious dis-

eases are generally most contagious in the period of incubation or the early stages, I chose the time when the secretions were most profuse for my inoculations. In no single instance was a cold contracted.

If a cold were an acute infection, its origin or source could nearly always be definitely traced; but this is rather a hard thing to do and it is generally turned off with the remark, "I must have been exposed to a cold somewhere." It is true that a cold will frequently run through families and through offices where the clerks are closely associated, but this does not prove that a cold is spread by contact with other persons. These individuals, in the home and in the office, are subjected to the same unhygienic conditions of environment, and those conditions are the factors in bringing about an altered metabolism and a systemic disturbance affecting all the fluids and secretions of the body.

EFFECT OF CLIMATIC CONDITIONS

Climatic conditions have always been held responsible in some way for colds. Inclement weather conditions—of which the chief are severe cold, dampness, windiness, or sudden change of temperature—are frequently considered the exciting or at least a contributory cause of colds. The incidence of colds is generally greatly increased in the winter months and cold weather. Many observers have tried to explain why colds should be more prevalent in cold weather, and the theory most frequently advanced is the disturbing influence of cold upon the heat-governing center, through the autonomic nervous system; but the physiological function of the heat regulating center is to adapt the organism to frequently changing climatic conditions, and in health its regulating function is not easily disturbed.

During the winter months, we lose a part of the actinic effect of the ultra-violet rays of the sun because of its southern declination requiring the rays to pass through a thicker stratum of atmosphere which, especially if smoke-laden, acts as a filter to the rays and materially decreases their chemical action upon the blood, chiefly influencing its calcium content or calcium fixation.

Climatic variations are a contributing factor only so far as they inhibit our normal activities and decrease our utilization of protein foods which are always in excess of what we normally require. We eat too much and exercise too little in cold weather. Colds are less frequent in warm weather because we eat less of high protein foods and exercise more. A lumber camp in which I spent several years and where the men were exposed to all kinds of weather and sub-zero temperature, was particularly free from colds and respiratory diseases. I do not consider cold, *per se*, as an etiological factor.

The times of the greatest incidence of colds in our industry is on Mondays, days following holidays, and days following banquets or parties where there is an abundance of good things to eat! I have also observed that colds are very prevalent in our traveling salesmen and others who are on the road a great deal. While traveling there is a decided change in daily routine compared to the one maintained while at home, a proneness to overeat, drink too much alcoholic stimulants, an increased mental strain, irregularity of the bowels, lack of proper exercise, and loss of sleep. Fatigue, no matter how it is acquired, is a very important factor, and the reason for this is the altered metabolism of the blood and tissues which it produces.

What are the symptoms of a common cold? They vary with the severity of the attack. In a moderately severe one they are coryza, nasal and pharyngeal irritation, headache, muscle-ache, lassitude, anorexia, and malaise. These are also the symptoms of two widely divergent systemic disturbances, one of which is very prevalent and frequently diagnosed—the other is rather rare.

In a study of several thousand cases of colds extending over a period of 11 years, and after numerous unsuccessful attempts to inoculate cold-free persons with the secretions from acute colds, I am thoroughly convinced that an acute cold affecting the upper respiratory tract is not primarily an infection but only a symptom syndrome of a systemic disturbance.

A number of cases of colds of varying severity were carefully studied in the laboratory. Observation was made as to the degree of acidity of the urine; the CO_2 combining power of the blood as an indicator of the alkaline reserve; tests were also made to determine the calcium content of the blood, the sugar content; non-protein nitrogen and the basal metabolism. The urine invariably carried a higher degree of acidity than the normal—in some cases as high as 80° (normal 35°); the CO_2 combining power of the blood in all cases was low, the highest being 52 per cent; the sugar content of the blood was generally decreased (below 100 mg. per 100 c.c.); the metabolic rate was always on the minus side. (These cases were carefully selected because of their lack of any symptoms of disturbed thyroid activity.)

SUMMARIZING FINDINGS

There is a change in the blood chemistry and, consequently, there must be a change in the tissues supplied by the blood. There is a decrease in the bicarbonates or reserve bases contained in the blood plasma and the tissues, notably in that of the sodium and calcium salts; and an increase in the bicarbonate tolerance as determined by Sellard's

test. There is also a change in the activity of the thyroid gland, manifested by a decrease in the metabolic rate; a slight decrease in the sugar content of the blood with a slight retention of non-protein nitrogen. The secretions of the nose and throat are found to be less alkaline than the normal, sometimes having a decidedly acid reaction to litmus paper.

These findings seem to point the way to the conclusion that a cold is a local manifestation of a systemic disturbance; namely, a disturbance of the alkaline balance or reserve, in other words, a mild acidosis, or perhaps better stated, a lessening of the "buffer" action of the blood plasma through a decrease in its bicarbonate content. This conclusion is strengthened by treatment in which thorough alkalization will always abort and cure a cold—a radical statement but nevertheless true, provided the treatment is thorough.

INDUCING ACIDOSIS

I have been able to induce all the symptoms of a cold, in varying degree from a simple coryza to that of la grippe and the "flu," by the induction of an artificial acidosis through the administration of ammonium and calcium chlorides. The degree of severity of the symptoms was in direct ratio to the degree of acidosis induced. In the severer degree of acidosis, all the classical symptoms of the "flu" were present, even including a low degree of fever. The symptoms rapidly subsided upon the administration of sodium bicarbonate in large doses by mouth and by rectum.

AN ABORTIVE TREATMENT

If the disease is attacked when there is a beginning dryness in the pharynx or a slight coryza, or congestion of the mucous membrane of the nose, and alkalization is instituted by large doses of sodium bicarbonate, until the urine is alkaline to litmus paper, a "cold" can always be aborted. Along with the sodium bicarbonate which I generally prescribe in 60 g. doses, accompanied by a large glass of hot water, every 2 hours for 3 doses, I give to an adult 1 g. of calcidin (a calcium and iodine combination) every half hour until 6 doses have been taken.

Most colds begin to manifest themselves late in the afternoon or early evening and the abortive treatment is best given at this time up to retiring. At the time of taking the treatment, the usual meal should be dispensed with, or should consist of milk and some cereal, or soup or broth. If the bowels are constipated, they should not be moved by a cathartic or laxative but the lower bowels should be relieved by a soap suds enema. This treatment will abort colds, if taken in their incipency.

Where a cold has advanced to the stage where there is a hoarseness and a profuse coryza, or where this condition has advanced to what we generally term "a cold," I use the following treatment:

Initial dose 60 g. of sodium bicarbonate and 1 g. of calcidin, then 30 g. of sodium bicarbonate and 1 g. of calcidin every 2 hours for 6 doses, then 20 g. of sodium bicarbonate with $\frac{1}{3}$ g. of calcidin every 3 hours during the waking period until the cold is checked. The administration of the sodium bicarbonate should always be in or followed by a large glass of hot water. Locally, spray the nose and throat with a 1 to 5000 solution of metaphen, or other alkaline solution (1 dram of sodium bicarbonate to one pint of water) morning and night. If the bowels are constipated, I prescribe no laxative or cathartic but use an enema of soap suds to relieve the lower bowels.

Prophylaxis is best maintained by exercise and a diet which is well balanced and thoroughly adapted to the individual's physical activities.

CONCLUSION

Colds and their sequelae including rhinitis, pharyngitis, laryngitis, bronchitis, la grippe, influenza, and pneumonia are not infectious, as we generally consider a disease to be infectious, but are due to a disturbance of the alkaline reserve or balance (acid-base equilibrium). The more severe the degree of disturbance, the more serious the disease.

Conditions capable of producing a mild acidosis or disturbing the "buffer" action of the blood plasma, are contributing factors in producing a cold: a poorly balanced diet, lack of exercise, fatigue, constipation, and infections anywhere in the body. Colds can be prevented by maintaining the alkaline balance through proper diet, exercise, and the careful use of sodium bicarbonate or alkaline waters.

Colds can be aborted by administering sodium bicarbonate in doses large enough to thoroughly alkalinize the system together with small doses of calcidin or iodine and calcium.

Colds can be cured by the administration of the same drugs in smaller and frequently repeated doses.

DISCUSSION

Dr. Wade Wright called attention to Dochez's study of colds in some 40,000 persons. This showed distinct seasonal peaks, the highest late in winter, with the next highest in the fall. These peaks occurred on the Pacific coast the same as in New York City and without relation to temperature changes.

Dr. Emory W. Sink noted that after a football game at Michigan University there were invariably more colds than usual. Was this due to fatigue or to exposure? It has been shown that colds lasted on the average two days longer if cathartics were given. Yet there was something in the psychology of giving medicine of some sort. His general opinion was that there was some contact infection in the production of widespread colds.

Mr. Massey of the Pennsylvania Railroad Company declared that the common