

Dr. Fred Klenner reports that polio can be successfully treated with frequent massive injections of vitamin C, which will destroy the virus in direct proportion to tissue saturation. Vitamin B₁ should also be given for at least three months with the method of administration and amount dependent on the level of paralysis. He discusses a mistake by one early researcher, which led to resistance to the use of the vitamin C method, a “blunder,” he says, to which “thousands of children owe their paralyzed limbs.”—*R.D.M.*

The Vitamin and Massage Treatment for Acute Poliomyelitis

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When I was a boy poliomyelitis was killing 27 out of every 100 of its victims. Then parents and children alike gave it little consideration. At the present time, by virtue of the liberal infection of the general population through the annual epidemic, the death rate has dropped to 5 in 100 of recognized cases. Now parents and children alike have become so “sensitized” that July, August and September, instead of being days of vacation and fun, represent a period of isolation pregnant with apprehension. This unfortunate situation is the result of reckless propaganda. Little mention, if any, is given to rheumatic fever, yet rheumatic fever cripples more children each year than does poliomyelitis, the ratio being 10 to 1 for infection and 3 to 1 for crippling. The explanation is obvious. There is nothing spectacular about rheumatic fever. Those crippled by rheumatic fever can walk. The damaged heart muscle and heart valves of these victims are not visible to the public eye. It takes a child on crutches to open our eyes, and incidentally, open our pocketbooks.

The story of poliomyelitis is one of drama. Much serious thought has been given in an honest attempt to block the deadly sweep of this virus. On the other hand, much effort has been wasted simply because some personalities have taken advantage of their position to dictate the method of approach.

Poliomyelitis is just as truly a childhood disease as is measles or mumps. The three diseases are caused by the same type of germ—a virus. Each follows a definite seasonal pattern. Sixty-five per cent of those affected are in the age group one to seven. In its early phase it cannot be distinguished from other childhood diseases, especially measles. Poliomyelitis is, relatively speaking, a newly recognized disease, having been separated from other forms of paralysis by the German, von Heine, in 1840. In 1887 the Swede, Medin,

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called attention to its occurrence in widespread epidemics. In Sweden and Norway the disease was and still is endemic. At the turn of the century the disease invaded the more temperate zones of the world, the United States getting its first real experience of it in 1905. In the past 20 years 75 per cent of the cases reported have occurred in our country and adjacent parts of Canada. The year 1916 witnessed the first major epidemic, chiefly in New York City: the death rate was 26.9 per cent. In 1935 the next worst epidemic up to that time hit, with North Carolina receiving the brunt. The death rate had dropped to 9.6 per cent. At present the figure is around 4.5 per cent. These figures postulate a gradual automatic immunization of the entire population, through widespread occurrence of infection without symptoms. Even now 90 per cent of the adults living in cities are shown to be immune by neutralization test on monkeys. This test is not practicable for use in a general manner since it requires one monkey for each case.

The value of isolation and quarantine in preventing the spread of the disease is questionable. They should, nevertheless, be enforced if for no other reason than as a morale builder for the family across the street. The most effective viricide is one of the chlorine compounds. One teaspoonful of either sodium, potassium or calcium hypochlorite, mixed with feces roughly macerated in a quantity of plain water, will certainly sterilize the material. The same method can be employed for nasal and oral secretions. It will require 1½ hours to destroy the virus. (Sodium hypochlorite is the familiar household standby Linenwhite or Chlorox).

No specific prophylactic measure which has been brought forward is of practical value. Passive immunization by the injection of varying amounts of compatible city adult blood serum is not likely to be harmful, but its usefulness has never been demonstrated. Many infants are passively immunized for their first year because of having immune mothers. Active immunity has been attempted in several ways. So far the decision is that neither should be used. Isolation of the various strains of virus capable of causing poliomyelitis is now in progress. The preparation of a workable vaccine can only be started once all the strains are known. Dr. Valley, from his vast experience, states that it will require a large number of highly skilled technicians at least 20 years to accomplish this end.

Nonspecific prophylactic measures have proved valueless in the human.

Three methods of treatment prevail today for the patient ill with poliomyelitis. (1) The Orthodox treatment which does little or nothing for the first 10 to 14 days. It does believe in early splinting and neither active nor passive motion until pain and tenderness disappear—a period of two to eight weeks. The patient is not to be moved for any considerable distance; sedation if necessary, hot packs for relief of pain and tenderness, occasionally 10 per cent glucose in saline solution by needle. Later gentle massage, passive motion and finally active motion. Surgery for tendon or muscle transplantation, stabilization of weak joints and the correction of inequality of the extremities or fixed deformities. (2) The Kenny treatment which ignores splinting and initiates early therapy. Its features are hot moist packs to relieve spasm in opposing affected muscle, reëducation of muscles to prevent muscle substitution. Early passive motion. (3) The Klenner treatment which employs pillows to effect physiological rest for paralyzed muscles, sandbags to prevent foot-drop when indicated, immediate and continuous

gentle massage and passive motion, aspirin to modify early pain, and chemical agents that destroy the virus, remove the edema pressure from the central nervous system, correct metabolic pathology, and rehabilitate damaged nerve tissue.

The purpose of any treatment is to keep the patient alive, to prevent paralysis or to correct it if present, and eventually to restore the body to a healthy state. Since not all of these conditions can be fulfilled by the orthodox and Kenny methods except when remission is spontaneous and early, it is suggested that more emphasis be placed on the method using vitamins and massage.

Early workers appreciated the importance of reducing the spinal fluid pressure, although they were not cognizant of its modus operandi. Lumbar tap was the choice until Flexner and Amoss warned that even very slight hemorrhage opens the way for the passage of the virus from the blood into the central nervous system. By the time the spinal fluid becomes positive, the clinical signs and symptoms will make the diagnosis. Other methods employed in the past for the removal of this edema pressure were: (1) The forced drainage of Retan. (2) The administration of triple concentrated serum of Thalhimer. (3) The use of hypertonic glucose solution.

In some places 10 per cent glucose is still given immediately following diagnosis of poliomyelitis. This measure is without proven value and it is highly possible that it is harmful. It has been reported (Wilson, 1951) that the intravenous injection of even 5 per cent glucose, in doses as small as 7 c.c. per kilogram of weight, will practically double cisternal pressure when given to a subject having increased intracranial pressure. Any interference with the normal physiology of the adrenals will have a profound effect on carbohydrate metabolism. The action of the virus in the body depletes the vitamin C reserve in the adrenals. This sets off a chain of chemical reactions which result in hyperglycemia and glycosuria. Apparently the adrenal medulla is released from its inhibiting mechanism allowing a concentration of free adrenalin in the blood high enough to cause continuous vasoconstriction. These findings also argue against the use of glucose solution, since it would only serve to embarrass an existing condition of artificial diabetes mellitus.

The edema pressure in the central nervous system in acute poliomyelitis is the end result of the inflammatory reaction caused by the virus. It is highly probable that this edema is augmented by vitamin B₁ avitaminosis. Here the primary edema pressure, acting as a hemostat on the nutrient vessels, shuts off the chemicals essential for proper nerve tissue function. Vitamin C is present in all the normal fluids which possess neutralizing properties for the poliomyelitis virus (Clark). Adequate amounts of this vitamin, either by vein or muscle, is recognized as a potent dehydrator and diuretic. Given in massive doses it will relieve the edema pressure of the cord and brain, thus allowing normal amounts of vitamin B₁ to reach chemically shocked nerve cells. Hypertonic sodium lactate solution is an adjuvant in lowering high spinal fluid pressure. If used, no more than one or two injections should be made since hypertonic sodium salts tend to cause fever (Wilson).

Vitamin C will do more than relieve fluid pressure in acute poliomyelitis. Vitamin C will destroy the virus in direct proportion to tissue saturation. Heaslip, observing poliomyelitis in humans, reported a mean urinary output of vitamin C under a load

test of 19.9 per cent in 60 cases, as contrasted with a mean figure of 44.3 per cent in 45 healthy contacts. Heaslip was also able to show a correlation between the severity of the attack and the level of urinary excretion of the vitamin. Jungeblut, experimenting with Rhesus monkeys, obtained evidence that vitamin C had a positive influence on the virus causing poliomyelitis. His results were indecisive only because the amount of vitamin C given was inadequate to cope with the degree of infection which he had produced. Sabin's results were not as suggestive as Jungeblut's because he Sabin used a greater dose of virus and less vitamin C. Thousands of children owe their paralyzed limbs to this unfortunate blunder. It is, however, important for us to analyze Jungeblut's report. He observed: (1) "In vitro" multiple paralytic doses of poliomyelitis virus when brought together with small amounts of synthetic vitamin C were rendered non-infectious. This was confirmed by the intracerebral injections of such mixtures into Rhesus monkeys. (2) When monkeys were infected with maximum severity, vitamin C given by needle failed to exert any influence on the course of the disease. (3) When a less forceful method of droplet instillation was used, vitamin C by needle gave inconsistent results. When the droplet method of infection was used, the dose of vitamin C was constant at 100 mg. per monkey per day. This explains the variation in response; that is, it was impossible to give each monkey the same amount of virus per/kg of body weight, yet the experimental drug remained the same. Another argument comes with the single daily dose. Recent work offers evidence that the reproductive powers of the virus are almost beyond comprehension. With the single day dose of vitamin C, as followed by Jungeblut and Sabin, it is no surprise that their results were negative.

In the test tube all of the vitamin C and all of the virus were in direct communication, allowing a maximum effect of the vitamin C. In the body only a very small portion of the vitamin C injected reached the area of pathology. In our own observations, when a case of poliomyelitis was treated in the early phase of the virus invasion, the period of septicemia, vitamin C had its most dramatic effect. Our use of vitamin C in many types of virus infections, including poliomyelitis, made it clear that for optimum results the vitamin must be given in massive doses, every two to four hours, around the clock. Since the degree of absorption of the synthetic vitamin through the gastric mucosa is so uncertain, the vitamin must be given by needle, and from 65 mg. up to 250 mg. per kilogram of weight.

In all virus infections the Benedict urine reaction for sugar will run from 2 to 4 plus, depending upon the amount of invasion. Following the injection of vitamin C this reaction will clear in 18 to 36 hours. *This is a paradox.* As McCormick reported (1952), vitamin C, itself, has the ability to reduce Benedict's solution so as to give a false test for sugar. If a healthy individual is given one or two grains of vitamin C by injection, the urine will show a positive Benedict sugar reaction for hours thereafter. Likewise in the test tube, if one drop of 0.5 gm./1 c.c. solution of vitamin C is placed in 5 c.c. Benedict's solution it will give a 4-plus false sugar reaction; one drop of 1 gm./5 c.c. vitamin C solution in 5 c.c. Benedict's solution will give a 3-plus false sugar reaction, and one drop of 1 gm./10 c.c. vitamin C solution in 5 c.c. Benedict's solution will give a 2-plus false sugar reaction. This would seem to be sufficient evidence that vitamin C and the virus bodies do form a new compound. If this were not true, then the false sugar response

to the Benedict's urine test should show an increase instead of the actual decrease as vitamin C injections continue.

When the urine again shows a Benedict's reaction after the phase of clearing, it must be concluded that the organism has again been restored to normal. Therefore the Benedict's urine test must be followed as a guide in the discontinuing of vitamin C therapy in virus infections.

Administered according to these basic rules, vitamin C performs four functions in poliomyelitis: (1) It destroys the virus. (2) Acting as the dehydrator and diuretic of first choice, it removes the edema fluid from the brain and the cord. (3) It maintains the normal biochemical activities of the adrenal glands. (4) It preserves the lining of the central canal and maintains more regular spacing and less crowding of the ependymal cells (Altmann).

Rehabilitation of nerve tissue must next receive serious consideration.

McCormick observed that both beriberi and poliomyelitis exhibit flaccid paralysis and atrophy of muscles, with marked muscle pain, tenderness, cramps or spasms; that both show chromatolysis, vacuolation, pyknosis, demyelination, neuronphagia, edema, lymphocytic infiltration and gliosis. Following B₁ avitaminosis, degenerative changes in the medullary sheath can be demonstrated in scattered fibers in all tracts of the cord, especially in the posterior columns and in both the anterior and posterior nerve roots. These changes in most cases are incomplete, and so the cells are capable of recovery. Another important finding reported by Peters is the failure of the organism to metabolize pyruvic acid. The pyruvates are peptizers capable of producing cloudy swelling almost entirely limited to the distal portions of the nerves, which postulates disease of the muscle end organs. Vitamin B₁ after phosphorylation in tissues to form a pyrophosphoric ester can act as a co-ferment, assisting either the pyruvic acid carboxylase or its oxidase in breaking down the metabolite, pyruvic acid. This implies that the paralysis seen in poliomyelitis can be produced peripherally as well as centrally. The mechanism of generalized B₁ avitaminosis thus becomes intelligible. In the first phase of the disease the virus causes vitamin C avitaminosis, which, in turn, upsets the chemical equilibrium of the adrenal medulla, resulting in abnormally high concentrations of free adrenalin in the blood stream. Vasoconstriction results, affecting carbohydrate metabolism, the added sugar load calls for more vitamin B₁. A usual diet does not meet the extraordinary vitamin B₁ requirements, and a pyruvate block is precipitated at the neuromuscular junction. Johnson et al. believe that the accumulation of pyruvates in the blood, urine and cerebrospinal fluid is reasonably specific for vitamin B₁ deficiency. Chemical determination of the blood and/or urine pyruvates might prove to be a valuable, if not positive, test in suspected poliomyelitis. The specific value of vitamin B₁ in all of the fatigue syndromes is universally agreed. The flaccid paralysis of poliomyelitis represents one of these syndromes. From these findings it would seem imperative that vitamin B₁ be given routinely following the vitamin C therapy in each case of poliomyelitis.

Temporary interruption of the normal afferent impulses coming from the lungs to the respiratory center in the caudal part of the medulla oblongata can bring about cessation of the normal respiratory rhythm. Artificial respiration will maintain normal O—CO₂ exchange until such time as Nature can remove the "block" in the mechanism. The

same can be said for muscle when a “block” develops in its essential nervous pathways. Nerve and muscle cells in a flaccid extremity may be only tired but it is reasonable to believe that unless they are relieved promptly they may die. Immediate and frequent gentle massage and manipulation to a flaccid muscle or group of muscles will relieve the muscle tissue of their toxic agents during the emergency. Massage and motion are substitutes for normal muscular action. The pathology of nerve tissue in poliomyelitis resulting from the toxic stimuli of the pyruvates responds as do motor nerves that have been sectioned. Here the chronaxie of nerve and muscle remain unaltered for a period of 7 to 10 days at which time the nerve suddenly ceases to function. What is true for the gastrocnemius muscle of the frog is also true for skeletal muscles in the human. The paralysis is due to a difference in the chronaxie of the nerve and the chronaxie of a given muscle operated by “said” nerve. When the chronaxie of a given nerve and muscle are off time, that muscle misses—i.e., becomes paralyzed. With the nerve chronaxie gone, muscle chronaxie, especially in man, increases rapidly and at times becomes inexcitable. When the nerve chronaxie returns it is of no particular value since the chronaxie of unattended muscle is beyond its working reach. Two factors can moderate this chronaxie rise in man: (1) Free adrenalin circulating in the blood as a result of medulla adrenal pathology will offer some controlling influence on muscle chronaxie. (2) Muscle chronaxie in man assumes a less rapid rise if the muscle is caused to contract (Evans). Massage and manipulation will serve the same purpose. So little of the first is available for this function that diligent use of the second seems paramount. The use of a “medacolorator” might be considered for this emergency.

In summary three measures are significant in the treatment of poliomyelitis: (1) Give massive, frequent injections of vitamin C for a period of six days or until the Benedict’s urine test indicates that the organism has returned to normal. (2) Give vitamin B₁ for a period of at least three months following the initial course of vitamin C, the method of administration and the amount depending upon the existence or non-existence of paralysis. (3) Give immediate and continuous gentle massage and manipulation to the involved muscles.

Note from the Editor: Although references are included in the text, the original article included no bibliography.