

The subcutaneous injection of quinine in malarious fevers : a paper read before the International Medical Congress at Amsterdam, in September, 1883 / by J.B. Scriven.

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PRESENTED
by the
AUTHOR.

A PAPER READ BEFORE THE INTERNATIONAL MEDICAL
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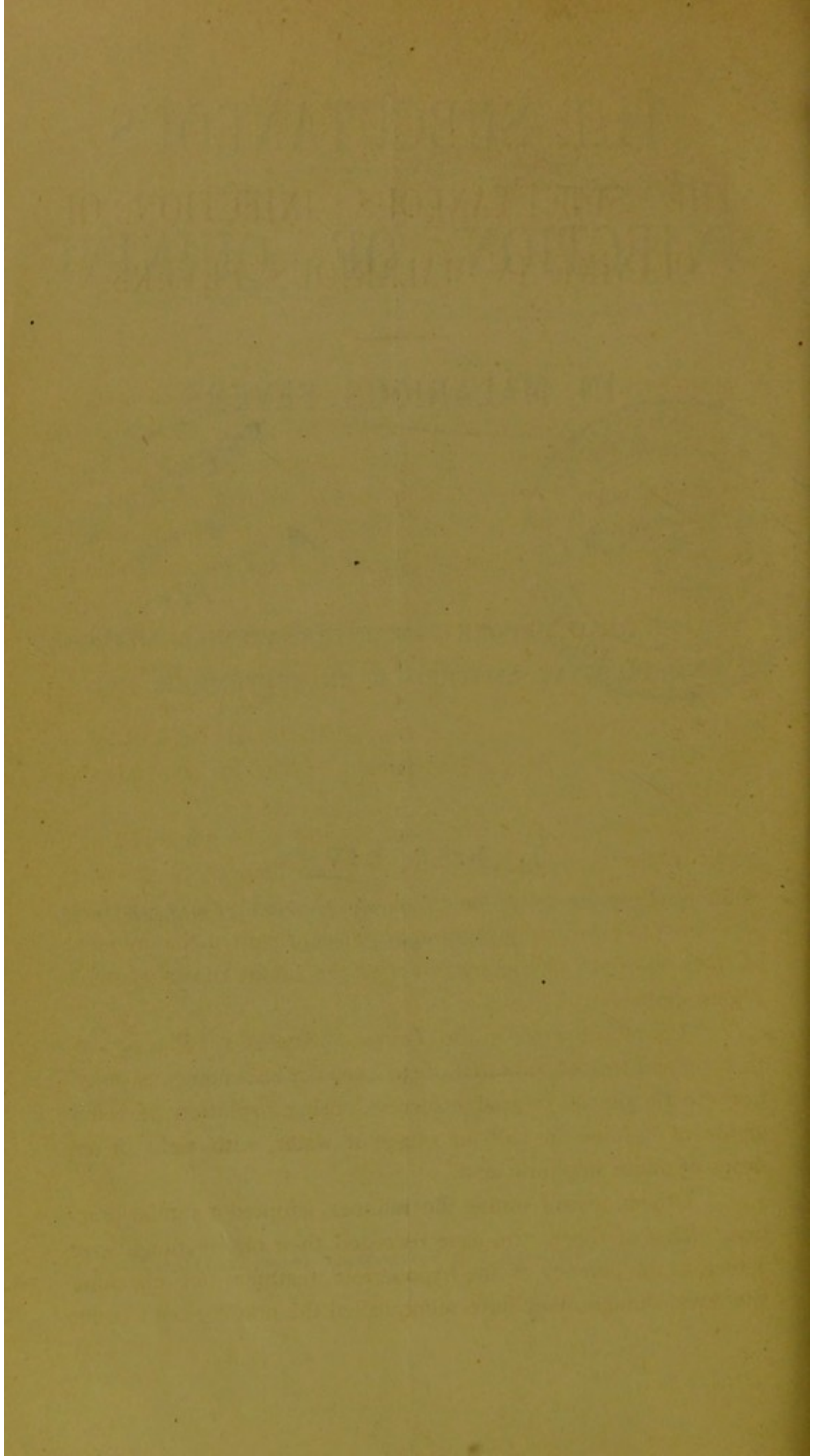
BY

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THE SUBCUTANEOUS INJECTION OF QUININE IN MALARIOUS FEVERS.

AMONGST the vast number of cases of intermittent and remittent fever, that present themselves to a practitioner of medicine in a malarious country, a certain number will be found not amenable to quinine taken by mouth or rectum. In such cases he naturally looks for some other mode of administration ; and in such only is the subcutaneous method recommended in this paper.

As long ago as 1862 quinine was thus given by Dr. Chasseaud, physician to the hospital of St. Antonio, at Smyrna. (See the *Medical Times and Gazette* of Aug. 2, 1862, p. 20). This is the first record I have been able to find, though Dr. Charles of Calcutta, and Dr. Moore of Bombay, appear to have adopted the practice earlier.

Dr. Charles had 100 cases, in which he employed with good results and without untoward consequences, a saturated solution of quinine in dilute sulphuric acid ; this injection, however, produced intense though transient pain at the moment of the operation. He afterwards used the liquid known as amorphous quinine.

Dr. Moore wrote in the *Lancet* of August 1, 1863, p. 126, that he had treated upwards of 30 cases by subcutaneous injection, "with almost invariable success," using a solution of thirty grains of quinine in half an ounce of water, with eight or ten drops of dilute sulphuric acid.

Others, myself among the number, adopted a similar practice. Most of those, who have recorded their observations, have agreed in the potency of the hypodermic treatment for checking the fever, though many have relinquished the practice on account

of the numerous accidents that attended it, such as abscess, ulceration, and tetanus ; indeed, these led, after a time, to the prohibition of this mode of using quinine in the European army in India. I myself, though not at the time practising among European soldiers, but among the natives of India, voluntarily abandoned it for the same reason.

In the year 1872, however, being then civil surgeon of Lahore, and finding the fever of that year of a peculiarly obstinate and virulent type, I determined to give the hypodermic method another trial in a different way.

I learned that my friend Dr. J. E. T. Aitchison, C.I.E., then civil surgeon of Rawulpindee, had adopted this method with good effect in the Rawulpindee jail, and that his solution was made as follows ; quinine sixty grains, tartaric acid thirty grains, distilled water sufficient to make three fluid drachms. I procured a syringe invented by Dr. Thomas Buzzard, of London (described in the *Lancet* of March 20, 1869, p. 397), and set to work with Dr. Aitchison's solution.

The fever of 1872 and the following years furnished me with a great number of cases, probably one hundred or more, uncontrollable by any ordinary method, and I found that hypodermic injections, on this new plan, were very often successful, and very seldom productive of unpleasant consequences. From these consequences tetanus has been completely eliminated, no case having occurred to me up to the present time, since I first began to use the tartaric solution in 1872.

I was occasionally troubled, however, during the three years from 1872 to 1875, by abscess, sloughing, and ulceration. The liability to these was a great drawback, which prompted me to inquire carefully into their causes, and I found ; 1st, that abscess was apt to form, if there was sufficient bleeding to distend the small subcutaneous cavity produced by injecting the quinine ; 2nd, that there was liability to a slough or ulcer, if the injected solution came too close to the surface of the skin. Of this dangerous proximity I sometimes became aware before I had completed the operation, by a blue discoloration taking place,

not at the point where the syringe was introduced, but over the orifice in its nozzle, through which the quinine escaped.

These observations induced me, with reference to the bleeding, to note in each case more accurately than formerly, the position of the cutaneous veins. The part in which the injection was made was usually the back of the forearm. If the veins were not obvious, I tried to render them so by grasping the arm above the elbow, and having so done, I selected and marked a spot where none were visible. With reference to the danger of injecting the quinine too superficially, I took care, as far as possible, not to catch the point of the syringe on the under surface of the skin, (an accident which had sometimes happened to me), and to turn the small hole in the nozzle *away* from the skin, so that the solution should escape towards the muscles, instead of towards the surface. These precautions were adopted during the last four years of my practice at Lahore, from 1876 to 1880. I am unable to state accurately the number of operations, but they were probably about eighty, out of which I had not a single instance of abscess, ulceration, sloughing, or any untoward result. As a rule, a little inflammation of the forearm followed; but if the limb were kept in a sling and cold lotions applied, this subsided in a few days. A hard knot or line, and some neuralgic pains at the spot, often remained for some time.

As a possible exception to the above statement of complete immunity from accident, I should say that one patient, on whom I operated several times, at considerable intervals, during different illnesses, had, when I last saw her, a slight contraction of the extensor indicis tendon. This came on some months after the last injection, and in the interval she had had rheumatism of the wrist, so that I could not certainly ascertain to which cause it was due.

I have never known quinine, given in the hypodermic method, to produce ringing in the ears, deafness, or other unpleasant effects of quinine taken by the mouth.

I have performed the operation with equal benefit, on persons in various conditions of life, both European and native,

from the well fed gentleman to the imperfectly nourished pauper lunatic. I have very seldom had to perform it more than once in any one illness ; if a second operation has been necessary a few days after the first, I have done it in the other forearm.

One great advantage of Dr. Aitchison's solution of the ordinary sulphate of quinia is its high concentration, fifteen minims containing five grains, whereas the solubility of the neutral sulphate in water is only one in twelve.

In an adult, I inject from fifteen to twenty minims ; in one case of a child, under a year, I injected seven minims. The effect of one such injection has, in the majority of instances, been very decided, no paroxysm following the next day, though often occurring in a mitigated form the same day. Afterwards, there has generally been an immunity from fever for weeks or months, such as a much larger dose by the mouth, even when frequently repeated, has often failed to produce.

Dr. Buzzard's syringe, above alluded to (specimen shown), has a gold stem or nozzle one inch long, of which the point is steel, and the orifice is on the side of the stem, about one-sixth of an inch from the point. I introduce this, as far as it will go, keeping the orifice on the under side. When the instrument is withdrawn, the finger is applied over the small puncture for about half a minute. Most commonly none of the solution escapes, and often not one drop of blood. If there *is* any bleeding, I place a small fragment of burnt cotton upon the puncture, and press gently upon it. It is well to give the arm complete rest for a few days from the moment of operating, in order to limit or prevent inflammation. I think it is important that no oil should be applied either to the nozzle of the syringe, or to the washer of the piston, the quinine solution lubricating the latter sufficiently : nor should carbolic acid be used. The solution should be fresh, and of course care must be taken not to inject any air. Formerly I used to filter my solution, but finding that great part of it was absorbed by the filtering paper, and that when unfiltered it was free from visibly undissolved particles, I ceased to do this, and have had no reason to regret it.

The cases that I conceive to be suitable for the hypodermic method are comprised under the following heads ;

1st. Those in which quinine by the mouth and rectum has failed to stop the fever ;

2nd. Those in which there is great irritability of stomach, or great disgust for the remedy, and in which an enema cannot be retained ;

3rd. Those in which the fever, though controlled by quinine given in the ordinary way, yet requires large and repeated doses ;

4th. Those in which the effect on the head, or nervous irritability, produced by the drug, is distressing ;

5th. Cases in which death is imminent, and a remedy is necessary that shall produce a rapid and decided effect.

The success of my own cases, thus far, has led me to the belief that the subcutaneous injection of quinine is in many instances a useful and desirable practice, and that the dangers, which have caused its abolition in the Indian army, have no existence, if the precautions I have recommended be observed.



