

tion revealed no sign of albumin, no casts, no renal epithelium, and yet the autopsy book shows that they had contracted kidney.

Most operators of much experience have had the misfortune of having patients die from suppression of urine from one to four or five days after anesthesia either by chloroform or ether; and in these patients Bright's disease was not suspected until revealed at the autopsy. A diagnosis of contracted kidney cannot be made in many cases by urinalysis, and heart and arteries should be carefully examined for atheroma or enlarged ventricle. If the urine is of high specific gravity, scanty and highly colored, with albumin or casts, and the heart hypertrophied, with pulse of high tension, the probabilities are greatly in favor of disease of the kidneys, and also of an autopsy following operation.

The cause of suppression of urine following anesthesia is as yet a matter of speculation. It has been supposed to be due to the suspension of oxidation caused by the surcharge of the blood by ether or chloroform, and by deprivation of oxygen during its administration. (Porter.) Carstens thinks that it depends upon poisoning of the solar plexus. Others attribute it to refrigeration of the body from exposure, rather than to the anesthetic. Again it is attributed to free sweating and unloading of the blood vessels of serum, thus concentrating the blood, and making it unnecessary for the kidneys to excrete water, consequently the solids remain in circulation, uremia and death resulting.

The actual cause may be found in the direct irritant effect upon the epithelial cells of the few remaining malpighian tufts of the foreign and volatile vapor circulating in the blood, and seeking every avenue of escape. Although both anesthetics are rapidly eliminated, it is a matter of common observation that the odor of ether, more than chloroform, can be detected in the patient's breath many hours after consciousness has returned, and while constantly diminishing in quantity in the circulation, nevertheless, if it be, in any degree, an irritant to the renal cells, this action is continued until it is entirely eliminated, which may be several hours. Authorities all agree that suppression of urine follows administration of ether in a certain number of cases, but many instances are reported in which suppression has also occurred after the use of chloroform in chronic parenchymatous and chronic intestinal nephritis.

Ether has been looked upon as the safer anesthetic, probably because death on the table has been less frequent than with chloroform. Death on the table is doubtless due to paralysis of the cardiac or respiratory centers, and inhalation of a large quantity of anesthetic seems not to be necessary. The more remote death due to uræ-

mia, after prolonged and profound anesthesia, while it may indirectly result from the action of the poison upon the nerve centers, is ostensibly due to retardation of the excretory functions of the various eliminatiug organs. Doubtless the quantity of the anesthetic is important and should receive due consideration in all cases of anesthesia, but especially so when the kidneys are known or suspected to be diseased.

Ether, like chloroform, during prolonged anesthesia, depresses the heart, hence in case of chronic Bright's disease, chloroform should receive the preference, if operation be imperative, because anesthesia can be more quickly induced, more easily maintained, than with ether, and with a very much smaller quantity of the drug, while during its administration a much larger proportion of atmospheric air is permitted, by which the natural functions of life are maintained.

The hypodermic use of morphine before giving ether anesthetic is certainly rational, notwithstanding the fact that morphine temporarily diminishes the secretions. It does not totally suppress them, and the anesthetic does; hence substituting morphine for chloroform diminishes the risk of suppression by diminishing very materially the amount of anesthetic required. The previous use of ethyl bromide may prove an advantage in those hazardous cases, as it produces unconsciousness and muscular relaxation much more quickly than chloroform, with which the operation may be continued.

If the case is one of undoubted contracted or large white kidney, avoid operation entirely, if possible, or use local anesthesia. If albumin and casts are due to pressure of an abdominal tumor, and no cardio-vascular changes can be found, it is comparatively safe to anesthetise. Select chloroform, and use salines soon after operation, that the bowels may relieve the kidneys of the work. If albumin and few hyaline or granular casts are found, use as little anesthetic as possible and operate quickly. If the urine be scanty, of high color, with high specific gravity and cardio-vascular changes, beware!—F. B. Carpenter, M.D., in *Occidental Medical Times*.

CHOLERA VACCINE.

Since the days when it was first sought to control the ravages of small-pox by means of inoculation, and subsequently of vaccination, no greater interest has attached to the question of inhibitive inoculation than that which has been aroused in India and elsewhere by the proposal to protect communities against cholera by some such preventive method. A brief account of M. Haffkine's process of anti-cholera inoculation, as practised in India, has appeared in the public press; but as