

ON THE  
LIMITATION OF FLUID IN THE FOOD AS  
AN AID TO THE TREATMENT OF  
SEROUS EFFUSIONS.

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(Concluded from p. 840.)

IN the two remaining cases in which I have had the opportunity of applying the restriction of fluid, the treatment has been interfered with by disturbing causes.

The first was that of a boy of eight years suffering from slight general dropsy dependent upon mitral regurgitation and renal disease; the urine was scanty and albuminous. Drink was restricted to sixteen ounces, a purge of calomel and jalap given, followed by a pill of digitalis, mercury, and squill three times a day. A severe diarrhoea ensued, the quantity of urine remaining small until the purging ceased, when the flow of water increased to double the previous quantity. The drain upon the fluid of the body must have been great, but the main channel of excretion being by the bowels prevented any exact estimation. The œdema disappeared in the course of a few days, and, the patient complaining much of thirst, the restriction as to drink was removed.

The last case was one of pleurisy with effusion into the right side of the thorax, in A. P.—, a boy ten years old. There was a history of a definite commencement of the attack, with sharp pain and fever six days before. Physical examination showed the right pleural cavity to contain a large quantity of fluid, which reached to the level of the spine of the scapula behind and to the third space in front. The urine was measured for two days before treatment was commenced, and found to be 800 cc. and 750 cc. respectively; the average of drink taken for the two days being 25 oz. = 707.5 cc., yielding the unusual feature of an excess of outflow = 67.5 cc. Drink was then limited to 10 oz. = 283 cc., a purge of calomel and jalap being given, followed by a pill of digitalis, squill, and mercury, every four hours. The urine fell the next day to 375 cc., or 92 cc. in excess of the fluid swallowed—a gain in drainage of only 24.5 cc.; and the next day, again, to 350 cc., or 67 cc. in excess of inflow by drink; and a drainage equal to that existing before treatment commenced. On the third day, however, the urine rose to 450 cc., and on the fourth to 460 cc., being 167 cc. and 177 cc. in excess of inflow by drink respectively. The average for the eight days during which this restriction was maintained was 416.8 cc.; and an excess of outflow of 133.8 cc., or an average daily gain in drainage over the condition on unlimited drink of 66.3 cc. The fluid in the chest had declined, so that the level of dulness had fallen to the lower angle of the scapula. The pulse now became very irregular, and the digitalis was stopped, the fluid taken being increased by chinchona mixture to 367.9 cc. This was at once followed by a diminution in the flow of urine during four days, at the end of which time, the temperature remaining high (102° to 104° at night), and the fever causing much thirst, drink was increased to 849 cc. The loss in drainage was at once apparent; the average flow of urine only rose to 564.2 cc., so that in place of excess of outflow there was excess of inflow to the extent of 284.8 cc., or a daily drainage loss of 418.6 cc., as compared with the condition when on 283 cc. drink and the digitalis pill. The condition of the chest remained absolutely stationary; the high temperature also persisted. It was thought probable that this might be due to the presence of pus, and the chest was tapped on May 9th, three weeks after admission. Only two ounces of clear serum were obtained, with the result of improving the entry of air and giving rise to friction-sound under the right mamma. The boy was from the time of tapping allowed perfect freedom as to drink, the amount taken being registered for seven days. The comparison with urine is in curious contrast to the preceding relations. As will be seen by the table, the average amount of drink taken was no less than 1413 cc., while the average flow of urine was only 708.5 cc., showing an excess of inflow over outflow of 705 cc., and a daily drainage loss, as compared with the condition under digitalis and 283 cc. drink, of

833 cc. It must be stated, however, that the quantity of urine recorded during this period of unrestricted drink is slightly under-estimated, owing to the loss of a small quantity passed with the stools on one or two occasions; in all other calculations this was invariably included in the estimate. The condition of the patient now remained stationary; the fluid in the chest did not further diminish, and the temperature remained three degrees above the normal. A second tapping was resorted to on June 16th, and two ounces more fluid withdrawn. This was followed by marked improvement; but eventually pus was developed, and although removed by repeated tapplings, and finally drained off by a free opening, the case ended fatally at the beginning of October.

TABLES SHOWING THE TREATMENT AND THE RELATION BETWEEN THE AMOUNT OF FLUID TAKEN IN AS DRINK, AND THE QUANTITY EXCRETED BY THE URINE, IN THE CASE OF ALBERT P.—.

I.—*First period of two days. Drink not restricted, but the quantity taken measured. No drugs were given. The bowels open normally.*

Date.	Cubic centimetres of fluid taken in preceding 24 hours.	Cubic centimetres of urine passed in preceding 24 hours.
April 19th	849	800
„ 20th	566	750

Average daily quantity of urine passed for two days on unlimited drink (or an average of 707.5 cc.) = 775 cc. Average daily excess of outflow by urine over inflow by drink = 67.5 cc.

II.—*Second period, comprising eight days. Fluid restricted to ten ounces of milk = 283 cc. Drugs given: a purge of calomel and compound jalap powder, followed by a pill containing half a grain of digitalis powder, a grain and a half of squill powder, and a grain and a half of mercury pill, every four hours. Bowels open freely after the purge; subsequently regularly in the normal manner.*

Date.	Cubic centimetres of fluid taken in preceding 24 hours.	Cubic centimetres of urine passed in preceding 24 hours.
April 21st	283	375
„ 22nd	283	350
„ 23rd	283	450
„ 24th	283	460
„ 25th	283	500
„ 26th	283	450
„ 27th	283	450
„ 28th	283	300

Average daily quantity of urine passed for eight days on 283 cc. of drink = 416.8 cc. Average daily excess of outflow by urine over inflow by drink = 133.8 cc.

III.—*Third period, comprising four days. Drink restricted to ten ounces of milk and three ounces of mixture, or thirteen ounces in all = 367.9 cc. Drugs given: half an ounce of chinchona mixture every four hours. Bowels acted normally.*

Date.	Cubic centimetres of fluid taken in preceding 24 hours.	Cubic centimetres of urine passed in preceding 24 hours.
April 29th	367.9	300
„ 30th	367.9	360
May 1st	367.9	450
„ 2nd	367.9	435

Average daily quantity of urine passed for four days on 367.9 cc. of drink = 386.2 cc. Average daily excess of outflow by urine over inflow by drink = 18.3 cc.

IV.—Fourth period, comprising seven days. Drink increased to thirty ounces = 849 cc. Drugs given: chinchona mixture as before. Bowels acted regularly.

Date.	Cubic centimetres of fluid taken in preceding 24 hours.	Cubic centimetres of urine passed in preceding 24 hours.
May 3rd	849	500
„ 4th	849	480
„ 5th	849	650
„ 6th	849	640
„ 7th	849	670
„ 8th	849	650
„ 9th	849	350

Average daily quantity of urine passed for seven days on 849 cc. of drink = 564.2 cc. Average daily excess of inflow by drink over outflow by urine = 284.8 cc.

V.—Fifth period of seven days. Drink unrestricted, and quantity taken daily measured, the average being 1413.8 cc. Drugs given: the chinchona mixture as before. Bowels open in normal manner.

Date.	Cubic centimetres of fluid taken in preceding 24 hours.	Cubic centimetres of urine passed in preceding 24 hours.
May 10th	1768.7	820
„ 11th	1760.6	600
„ 12th	1556.5	1020
„ 13th	1528.2	500
„ 14th	1330.1	750
„ 15th	933.9	840
„ 16th	1018.8	450

Average daily quantity of urine passed for seven days on unlimited drink (an average of 1413.8 cc.) = 708.5 cc. Average daily excess of inflow by drink over outflow by urine = 705.3 cc.

The cases here reported are too few in number, and the experiments too limited in scope perhaps, to furnish any complete and final proof of the exact value of the treatment adopted. But one or two results come out very clearly, and are sufficiently striking and important to merit further examination—viz.:

1. The fact that, in cases of serous effusion at any rate, if the fluid taken into the body as drink be limited to a small quantity, an amount of fluid can be drawn out of the body by the stomach and bowels greatly in excess of that thus put into it at the time.

2. That, although the excess of fluid thus drawn off may be obtained, to some extent, at the expense of the other secretions or the blood, the simultaneous subsidence of the dropsical accumulations, and the absence of any other sufficient source of supply, show that it must have been chiefly derived from the latter.

3. The proportion of outflow by urine to inflow by drink, or the gain in drainage by the kidneys, was always greater when the fluid taken in as drink was reduced below twenty ounces; and more than this, that the gain in drainage was in inverse proportion to the fluid swallowed.

4. The greatest drainage—i.e., the greatest excess of outflow over inflow—was attained in each case under the administration of digitalis.

5. The reduction in the gross outflow of urine was always less in proportion than the reduction of inflow by drink, with which it corresponded; and, conversely, the increase of urine was always less than the corresponding increase of inflow by drink. The latter result may, however, have been affected by the previous privation. While it appears, therefore, that in these cases the drainage by the kidneys was generally effective in inverse proportion to the quantity of drink swallowed, and that under the influence of digitalis a greater excess of outflow by urine over inflow by drink was

obtained when the latter was limited to from five to sixteen ounces than when twenty to thirty ounces were taken, it does not necessarily follow that the same rule would hold good if larger quantities of fluid still were taken. It is possible that the additional quantity taken in may be more than compensated by increased outflow under the action of purgatives and diuretics. The enormous discharge of urine in the first case under the influence of digitalis, for two days before the drink was limited, would at first sight seem to support this view. But although, owing to the amount of drink not being measured, the means of accurate comparison are wanting, if we take the lowest average of 30 oz. = 849 cc. as the quantity of drink, it will be seen that the excess of inflow over outflow was 451 cc. and 195 cc., or an average of 1100 cc., as compared with 2157 and 1357, or an average of 1757 cc. for the two days next following, when the fluid was limited to sixteen ounces. The presumption furnished by the evidence in these cases, and especially by the record of the last, during the period when drink was unlimited, is against the view that the diuresis would be increased in proportion to the increased supply of fluid—that is, “water in the best diuretic.” But experiments as to the effect of diuretics, and especially of digitalis, together with a free and large supply of drink, are necessary to clear up the point satisfactorily.

It is remarkable that the suffering from thirst should have been so slight. The restriction of drink caused no serious distress in any case, and the discomfort experienced was relieved and fully compensated for by a few acid drops, except in the fourth and fifth cases, in one of which there was advanced renal disease, and in the other much fever.

It is further worthy of note that the limitation of drink did not produce any great diminution of the gross quantity of urine in the case of renal disease, nor any symptoms which would forbid the adoption of such treatment on occasion in similar cases. It would be desirable to ascertain the effect of the restriction on the excretion of urea.

Finally, then, limitation of drink may fairly be used as an adjunct to treatment in cases of passive dropsy, or inflammatory effusion when the acute stage is over. In acute cases, accompanied by much thirst and fever, such restriction would probably be ill borne. In serious renal disease I should hesitate to adopt it, except with much caution and constant estimation of its effect upon the gross excretion of urea.

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## TREATMENT OF NEUROSAL AFFECTIONS OF THE HEART.

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(Concluded from page 837.)

THERE are other cases of a more aggravated nature, where the whole nervous system is unstrung, but where the chief complaint is of the heart. Such cases are most marked and most commonly seen in women. Instead of going over the general symptoms of such cases, I prefer to relate a typical case, the more illustrative as it demonstrates what treatment may do for these sufferers.

M. H.—, aged forty, a married woman with children, was brought to me at the West London Hospital on the 4th March, 1875, by my colleague Dr. Wiltshire, as a case that would interest me. She was a woman of good physique, and intelligent beyond the majority of women of her class in life. The most marked symptom about her was an expression of uneasiness and apprehension. She was afraid of all and everything. She was afraid to be left at home; she was afraid to go out. If a knock came to the door it would give her such a start, and bring on such an attack of palpitation, that frequently she could not get across the floor to open the door. On account of its effects, especially upon her heart, she had been obliged to give up all intercourse with her husband for some years past. She always suffered from severe headache at every catamenial period. Life she described as having become a burden to her. She was put upon a mixture of bromide of potassium and digitalis in infusion of cascarrilla. To regulate the bowels, she