

to check the discharge of the poison, only more certainly bring about a fatal issue. The usual formulary of the sick-room is to torment the patient with hot bottles, bricks, mustard plasters, kneading the limbs, administering opium, assafœtida, brandy, ammonia, chloroform, &c., &c., *ad nauseam*; it is all useless, and the patient asks only to be left alone, for nothing soothes the troubled stomach; at last the looked-for, wished-for lull takes place, and the discharge of water gradually ceases as profound collapse comes on. The patient now has reached the point where, cured of the disease, he has to encounter the result, and the fight for life is a tough one. Here the physician steps in, and the one sole object to be kept steadily in view is, that the absorptive function in skin, lungs, stomach, and intestines must be re-established, and by this means water supplied to the blood. I know of no *certain* way of bringing this about; I wish I did, for then the problem would have been solved; but perseverance in rational treatment is most frequently crowned with success, and the returning heat of the pulse and the brightening eye well repay one for a night's loss of rest, while battling with disease. The plan of treatment which I have found most successful in collapse may be briefly described; to be thoroughly carried out, it requires the appliances of a cholera hospital. And in times of epidemic visitation all, both high and low, should be treated in such. This may be practically a Utopian idea, but theoretically it is a very sound one. As soon as the alvine discharge ceases, the patient should be placed in a tepid reclining bath, not hot enough to be disagreeable, say about 90° F., and the temperature very gradually raised until it reaches 105° F., or higher, if it can be borne. The effect of this is threefold—*1st*, it draws the blood from the congested organs internally to the surface, unloading the semi-paralysed heart and relieving the engorged lungs; *2nd*, it supplies the heat so much wanted, and which cannot otherwise be given; *3rd*, it offers to the skin and its absorbents the thing sought to be introduced into the system, and presents it in the most favorable manner to the largest absorbing surface. If the warm-bath be adopted early, the pulse immediately rises on immersion, and continues for some time to do so; this should be carefully watched, for it is the guide to our perseverance in its use. When the pulse remains stationary, or when it begins to lessen in either strength or number, the patient should be removed, dried, and placed between warm blankets; the bath may be repeated three times, but it is not often necessary more than once; immediately after this a large injection of warm milk, or arrowroot and milk, sweetened as for drinking, should be thrown far up the colon through Reid's long tube; if this is retained, a favorable result may be hoped for. The administration of food is too often neglected; it should early be given in small quantities and of a palatable nature; thin arrowroot or sago made with water, and flavoured with wine or acidulated with lemon, is generally agreeable, is freely taken, and usually remains. A critical sleep frequently comes on after the bath, and if food has been administered, and the injection retained, the change for the better is evident when the awakening comes.

The next most favorable means of introducing water is by the inhalation of steam. Water finding its way in minutely divided particles to the lungs, is readily absorbed and directly conveyed to the venous blood. The cholera ward should always contain an atmosphere saturated with warm moisture; could it be filled with clouds of condensing steam, it would be a model ward. Food to support strength, and water to liquify the blood, are indicated instead of drugs; the use of stimulants, carminative astringents, and sedatives must be left to the discretion of the physician; I would only urge the harm the latter may do, if in the early efforts at absorption, they lull the vessels to a fatal sleep.

When all still fails, the most powerful means of rousing the sinking heart, and which I have over and over again seen suc-

cessful, is the application over the heart, and to the diaphragmatic region, of the temperature of boiling water. This is best done by keeping water boiling at the bedside in a *lota*, and placing two ordinary tablespoons in it; these when taken from the water at a temperature of 212° F., and their bowls placed over the regions indicated, will cause immediate action of the heart and inspiratory muscles. The most moribund patient will wince at the application of this, and the pulse quickly rises under its use, as well as the respirations; used at intervals of ten or fifteen minutes, it is a valuable adjuvant in restoring from collapse. Much objection will be made to the severe pain it causes, but the only bad result following it is the removal of the cuticle or the effects of a scald; it is doubly valuable as a means of powerful stimulation, from being always readily procurable.

The abstraction of a small quantity of blood from the arm sometimes wonderfully relieves oppression, and I know of nothing which better removes cramp. An ounce or two withdrawn from the right arm, followed in an hour by the same from the left, instead of weakening, strengthens and brightens the patient. Further than this I would not go, not so far until there was some evidence of the re-admittance of water into the circulation.

Demulcent, nourishing, or stimulating drinks of any kind, which the patient may ask for, he should freely have when the stomach will retain them: food, water, and heat supply all the wants of the collapsed.

The principle of treatment kept in view, minor matters will suggest their own best remedies; mustard to the epigastrium, leeches to the temples, friction to the extremities or trunk, ice-caps, blisters, &c., &c., may all be useful and required. I did not propose to myself to write a history of the disease or its treatment, and have been betrayed into writing at greater length than I originally intended. These observations are the result of the experience of three epidemics in this country, as well as the numerous isolated sporadic cases of every-day occurrence. A marked and most happy change in the type of the disease was noted in the epidemic from which the Hidgelee district suffered in the early part of last year, after the ravages of the cyclone; the predisposing diarrhœa was short but well marked, and was frequently cured by the ordinary cholera pill and mixture. When it refused to yield, the established disease with its characteristic accompaniment came and lasted generally three to six hours, being succeeded by a collapse which was *peculiarly long*, often lasting three days, and this made the epidemic far more manageable than usual; for I looked on such cases as cured of cholera, and only requiring careful treatment and constant watching to bring them round. Most gratifying results followed in those to whom I could myself attend, for secondary fever never occurs where over-stimulation has not been used. In conclusion, I would ask that the disease be treated on principle, not empirically. Others may find more successful means of doing what I have endeavoured, but that the timely supply, by artificial or natural means, of water to the waterless blood is as well the rational as the sufficient cure of cholera, the bed-side physician will soon acknowledge.

Jessore, February 1866.

CASES FROM PRACTICE.

CASE OF FRACTURE AND DISPLACEMENT FORWARDS OF THE BODY OF 1ST LUMBAR VERTEBRA.

By J. MUNDAY,

ASSISTANT SURGEON, H. M.'s 21ST HUSSARS.

No. 326, Private Richard Reynolds, 21st Hussars, aged 26, a healthy young man of stout build, middle height, and very active

habits, was mounted in the barrack square at Umballa on the morning of the 25th September, 1865, prior to going out to field drill with the regiment, when his horse became restive, reared up in the ranks with him, and fell back, the weight of the horse coming with full force on him and crushing him to the ground, the hilt of his sword intervening between his back and loins.

He was not rendered insensible by the fall, but screamed out in great agony for some time, and when raised from the ground to be put into the dooly for conveyance to hospital, it was found that both legs were completely paralyzed. He was seen almost immediately after admission to hospital by reporter, who found him in great pain and quite unable to move in bed without assistance, all his sufferings being referred to the lower part of his back and loins, commencing from about the 9th dorsal, and extending down as far as the sacrum; in about the middle of this space he said it was that he received the injury from the hilt of his sword coming under him, when the horse fell back. There was much tumefaction, tenderness, and heat all along the lower part of the spine, but no fracture could be detected at the time; there was total loss of motion and sensibility in both lower extremities, but from about the upper third of the thigh towards the abdomen sensation partly remained. He was at once placed in a warm bath for half an hour with some relief to the pain, and afterwards laid on a water bed, face downwards, and his back and loins fomented with hot water containing some tincture of opium.

At bed-time a draught containing muriate of morphia was given, and the hot fomentations ordered to be continued throughout the night, should sleep not supervene.

26th September.—Has scarcely slept at all last night, but is in no actual pain so long as he is lying face downwards on the water-bed and is not moved, any change of position being attended with sharp pain between the 10th dorsal and 2nd lumbar vertebra, in which situation a fracture is more than suspected; pulse 80 and firm; has not made water since admission; a catheter was introduced and some 23 ounces of ammoniacal urine drawn off; 36 leeches applied to the back, followed by hot fomentations, and a morphia draught ordered at bed-time.

27th.—Slept for about two hours during the night; bowels torpid; pulse good; is anxious for food; catheter introduced, 26½ ounces of urine, similar to yesterday's, drawn off; a large warm enema thrown up.

Vespere.—There is still extreme pain and tenderness on pressure over the entire back and loins; 24 leeches applied; hot fomentations continued; haustus morphiae at bed-time.

28th.—Slept a little during the night; feels more comfortable; pulse 86; tongue clean; bowels have as yet been unmoved. A castor oil enema administered, 21 ounces of urine drawn off.

29th.—Feels comfortable, unless when moved in bed; bowels have not been acted on; repeat enema, 18 ounces of urine drawn off.

30th.—Much in the same state; 15 ounces of highly ammoniacal urine drawn off.

1st October.—This morning at 1 a. m. was seized with sharp rigors, which lasted more than an hour, followed by severe pain in the pubic region, and distension over the bladder; a catheter was passed, and about an ounce of dark colored and offensive urine drawn off. An enema of warm water and oil was thrown up, which brought away some feculent matter, the first passed since admission to hospital; 36 leeches were applied over the lower part of the abdomen, and the whole belly well fomented. On being again seen at the usual morning visit, he was found still in severe pain over the pubic and right and left iliac regions, and the whole surface of the belly was hot and tender to the touch; tongue furred; pulse small and quick. Ordered an anodyne draught at once, and to take calomel grs iij. opium gr i. in a pill every three hours; abdomen to be frequently fomented.

12th noon.—Abdomen tympanitic; pulse small, feeble, and quick; complains of shortness of breath; features greatly changed and sunken since morning; has vomited some bilious matter. Haustus effervescens cc., spt. æth sulph, omni horâ.

3 p. m.—Pulse almost imperceptible at the wrist; arms and chest cold and clammy; to have an ounce of brandy with some soda-water every hour, and strong beef-tea at intervals. His stomach continued very irritable, and his pulse weak and thready; towards evening the pain in his abdomen quite ceased, the upper extremities being cold and clammy; belly tumid and hot;

1½ ounces of turbid urine drawn off; hot turpentine stupes continued to the abdomen. Brandy and beef-tea given at intervals. He slowly sank and became unconscious towards midnight, and died at 1-30 a. m. on the 2nd October, eight days after receipt of the injury.

Autopsy six hours after.

Head.—Not opened.

Thorax.—Old adhesions of the pleura throughout the lower half of the chest; some congestion of the lungs at their bases, although otherwise healthy. Heart of normal size; valves healthy. The pericardium contained about eight drachms of straw-colored serum.

Abdomen.—This cavity was distended with air; about two pints of bloody serum was found, in which the intestines (which were matted together) floated; the peritoneum was also thickened greatly from recent inflammation.

Externally the sigmoid flexure of the colon presented a livid patch of discoloration, extending downwards for some five or six inches, and a corresponding appearance for the same extent internally; there was no ulceration apparent in the mucous membrane; bladder quite empty and contracted; mucous membrane pale; liver large and somewhat congested; kidney enlarged.

Dorsal region.—On dividing the integuments over the seat of injury, an immense patch of congested muscular tissue appeared, extending from about the three last dorsal vertebra down to the sacrum, and about three inches broad on each side of the spinal column, from which a quantity of dark venous blood flowed. On raising the muscles in this situation and exposing the back of the spinal column, fracture and dislocation forwards of the 1st lumbar vertebra was discovered; the transverse process and pedicle of this vertebra were also broken off, and the ragged edges were found compressing firmly the 1st lumbar nerve as it emerged through the intervertebral foramen; the transverse process of the 2nd lumbar vertebra was also splintered off. On taking out that portion of the spine comprising the 11th and 12th dorsal, and the first four lumbar vertebra, and making a careful dissection, the extent of the fracture was more fully seen, and the moist specimen was subsequently photographed.

The fracture extended diagonally from right to left, from below upwards through the pedicle and superior articulating process of the 1st lumbar vertebra, and across the body of this bone in its upper third; in fact it seemed as if the head of this vertebra had been knocked off with the inter-articular cartilage adhering to the upper fragment. The theca vertebralis was congested and thickened for about 1½ inches above and below the seat of injury, and here the nerve fibres were crushed, and a few of them torn across from the violence inflicted by the sharp edges of the bone.

Umballa, February 1866.

CALCULUS VESICÆ IN THE FEMALE.

By S. P. JOHNS,

SUB-ASSISTANT SURGEON, AGRA.

URINARY concretions are, comparatively speaking, less frequent in women than they are in the other sex; the reason is simple and explainable, from the very nature and construction of the female urethra. It is so short, straight, and capacious, that the renal calculus of ordinary size, having reached the bladder, finds there little or no obstruction in its further passage, and is thereby easily voided,—hence the expulsion of such formations from the bladder by natural efforts is the rule, and retention the exception. It is in these exceptional cases, when the calculus is too large to escape of its own accord, and produces the well-known distressing symptoms quite analogous to those in men, that surgical aid is sought.

The stone in such cases ought to be removed by one of the three following operations, viz., by dilatation of the urethra, or by incision, or both; but the risk of the subsequent incontinence of urine, which may follow either operation, is undoubtedly a great inconvenience, or rather a calamity, which the unfortunate patient is subjected to in her after-life, and on which we have little or no control, but certainly it is our duty to select the best way of relieving the sufferer with as little risk of the evil alluded to as possible. My experience is very limited; and in the absence of any statistics from other sources,