ease. 2. Paralysis of some of the muscles of the eyeball or errors in the refracting media; visual vertigo. In consequence of these derangements of the visual apparatus, erroneous, or rather contradictory, impressions of the relationship of external objects are carried to the cerebral perceptive centres. 3. Lesions of the coördinating and cerebral centres, such, for example, as tumours of the middle lobe of the cerebellum. This form we may term central vertigo. 4. Derangements of the cerebral circulation. (Circulatory vertigo as I am in the habit of terming it.) 5. Reflex irritation arising in distant organs, such, for example, as in the stomach (gastric vertigo). In many of these cases the vertigo is probably due to derangement of the circulation rather than to reflex irritation of the coördinating centre itself. 6. Epileptic vertigo, seen in cases of minor epilepsy (*petit mal*). 7. Psychical vertigo. Giddiness may sometimes arise from purely psychical causes, the giddiness which is caused by looking over a precipice is in part psychical, partly also visual. 8. Toxic vertigo. Certain drugs, tobacco for example, produce giddiness, but it is perhaps erroneous to group these cases under a separate heading. Poisons which produce vertigo probably act either through the circulation or directly on the coördinating centres themselves.

[A description was then given of the more important forms of vertigo, and the differential diagnosis of the condition considered.]

Clinical Remarks

ON

SOME AFFECTIONS OF THE URINARY ORGANS.

By R. H. MEADE, F.R.C.S.,

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On Pus in the Urine.

WE sometimes meet with cases in which pus is present in the urine, when it is difficult to determine whether it is derived from the bladder or kidneys. One cause of this difficulty arises from the circumstance that the presence of pus in the urine may give rise to great irritability of the bladder without that organ being implicated. It is well known that changes in the normal constitution of the urine of the most opposite character may render the bladder intolerant of its contents; thus the watery urine of hysteria sometimes causes as much irritation as the concentrated acid secretion of gout; and the presence of albumen occasionally produces a frequent desire to empty the bladder, accompanied also in some cases with pain on micturition, which may be the first symptoms leading to the discovery of Bright's disease. Except in a few instances, when pus is derived from an abscess in the prostate, or from the lining membrane of the urethra (in both of which cases the quantity will be small), whenever we find pure pus which is readily miscible with the urine, and is deposited in a yellow layer at the bottom of the vessel, the water at the same time being acid, we may decide that it comes from the kidney; for when pus is secreted by the lining membrane of an inflamed bladder it is usually more of the nature of mucus than pus, is glairy, viscid, often tinged with blood, and soon becomes ammoniacal and fetid. Pus coming from the kidney may be derived either from interstitial suppuration of the gland, from a distinct abscess in the organ, or from the lining membrane of the pelvis in a state of inflammation. The last affection, to which the term suppurative pyelitis should be restricted, may arise from several causes, the most common of which is perhaps the presence of a calculus in the kidney. It may, however, be simply the result of cold, and it is to the form of inflammation thus induced, which may be termed catarrhal pyelitis, that I wish to direct attention; for though casually alluded to by various authors it has attracted but little notice, and is, I believe, much more common than is generally supposed. Two cases of this kind having occurred in my practice during the last twelve months, I will briefly relate them.

During the cold weather of last winter an elderly gentleman one day called upon me, bringing some of his urine with him, complaining of great irritability of the bladder,

with constant pain, which was referred chiefly to the end of the penis. He was a thin man of abstemious habits, but of a gouty constitution, though he had never had complete gout. I found that he had been a good deal exposed to cold during several days previous to his visit to me, but had experienced no general ill effects from it; he complained of nothing but his bladder.

Upon examination of the urine which he brought, I found that it contained nearly half its volume of albumen. I therefore ordered him home at once, to go to bed and stay there, apply some mustard to his loins, and take some acetate of ammonia to act upon his skin. In two days from this date the albumen had almost all disappeared, and a considerable quantity of pure pus had made its appearance in the urine instead; the specific gravity was about normal, no casts could be found, and the slight amount of albumen remaining was evidently derived from the pus. Though the urine had thus changed, the pain on micturition continued to be so constant and severe that the patient thought the disease must be in the bladder or urethra, and not in the kidneys; there was never any appearance, however, of ropy mucus or blood in the urine, nor any discharge from the urethra, and though both a sound and catheter were passed on more than one occasion, nothing could be detected in the bladder; though the passage of the instrument produced excessive pain in the urethra and neck of the bladder, showing that an exceedingly sensitive state of the nerves existed. I felt convinced that this irritability was caused entirely by the presence of the pus in the urine, and the history of the case showed that the complaint originated in the kidney.

The case went on without much change for nearly four months, the urine always depositing a layer of thin pus after standing, being more or less acid, sometimes intensely so, and containing lithates together with the pus. No remedies produced any decided effect, though many were tried, such as counter-irritation over the kidneys, citrate of potash, &c. Temporary relief was obtained by the use of morphia suppositories. The general health, which suffered less than might have been expected, was kept up by plenty of light unstimulating food, and the quantity of pus gradually but steadily diminished, the irritability of the bladder disappearing together with it. In the spring the patient got out of doors, went from home, and soon completely recovered, the urine becoming quite healthy, and remaining so afterwards.

The second case was that of a young married lady whom I saw with Dr. Goyder. Her illness commenced by the passage of some bloody urine, and arose without any apparent cause, but probably from cold. The bleeding was followed by pain on micturition, for which she sought medical advice. Dr. Goyder found pus in the urine when he first saw her, but there were no other very serious symptoms until nearly a fortnight after the bleeding occurred; rigors with vomiting then came on, showing that there was inflammation of the kidney. I now saw her and found pain with great tenderness upon pressure over the right kidney, but none over the left; the bladder was irritable, the urine acid, and containing pus, which was deposited in a yellow layer at the bottom of the vessel after standing. The specific gravity was about normal, and there was only a trace of albumen present, evidently derived from the pus. The symptoms of acute nephritis continued for some time, the vomiting becoming so incessant that no food could be retained upon the stomach, and the strength had to be supported for two or three weeks by nutrient enemata. The question arose in this case what was the cause of the hæmorrhage and inflammation of the kidney with formation of pus; were they produced by a calculus in the pelvis? She had never suffered previously from symptoms of stone or gravel, such as nephritic colic or deposits of sand in the urine, so I came to the conclusion that the case must be looked upon as one of suppurative pyelitis from cold. The inflammatory symptoms gradually subsided, the vomiting stopped, the general health steadily improved, and the amount of pus in the urine slowly diminished. At the end of July, about eight weeks from the time of my first seeing her, the patient was able to leave home for change of air; a little pus still remaining in the water, though it was otherwise healthy. I heard that she continued to improve while away, and she returned at the expiration of some weeks in good health. Dr. Goyder informs me that he has examined the urine several times since she came home, and finds it free from pus.

This case differs from the former one by having been attended with more severe inflammatory and constitutional symptoms, but by less pain and irritation of the bladder.

The state of the urine was very similar in both, and they ran the same rather tedious course, the secretion of pus being apparently but little influenced by any remedies, beyond those which tended to improve the general health. The suppurative process appeared gradually to wear itself out, and to leave no permanent kidney mischief.

On Urine of Low Specific Gravity

Cases of kidney disorder sometimes occur in which the urine remains persistently of low specific gravity, without containing albumen. Many years ago the late Sir B. Brodie pointed out that in these cases operations were badly borne, the constitution being in an unhealthy state, and unable to bear any sudden shock or drain. The lightness of the urine in these cases seems to depend principally upon a deficiency of urea, and it will be found to be not only light in both weight and colour, but without the proper urinous smell. It will also keep for many days without becoming fetid, or undergoing any apparent change. Many years ago I noticed the want of smell and the keeping power of the urine in chronic Bright's disease; and I have often been correct in diagnosing disease of the kidneys when I have found the urine inodorous. The watery urine of hysteria will be found to smell in the ordinary way, though faintly, and will soon decompose when kept. Many of the cases to which I wish to direct attention are connected in some way with Bright's disease, though there may be no escape of albumen from the kidneys; others, however, occur in which the kidneys seem temporarily to have lost their proper excretory powers in consequence of a defective supply of blood, such as occurs in anæmia.

I will briefly allude to two cases in illustration of these two forms of the affection. During the past summer I saw a middle-aged gentleman with Mr. Terry, suffering from symptoms of uræmia following an attack of acute congestion of the kidneys, the urine being highly albuminous. By active treatment he recovered so far that he was able in a few weeks to resume his usual occupations, no trace of albumen remaining in the urine; he did not, however, get thoroughly strong, and Mr. Terry tells me that the urine remains persistently of low specific gravity, though perfectly free from albumen. The kidneys have evidently not recovered their healthy powers.

The other case is that of a young woman who three years ago had an attack of exophthalmic goitre, accompanied with anæmia. The disease is gradually disappearing; the enlarged thyroid has diminished; the prominence of the eyeballs has almost disappeared, and the heart's action, which was at one time violently excited, and accompanied by a loud anæmic bruit, has become almost natural; she is still, however, somewhat pale and bloodless, and the urine is too low in specific gravity, as well as inodorous. In this case I do not think that there is any kidney disease, and believe that she will recover her health, and that the urine will become natural.

ON THE NATURE OF SNAKE-POISON;

ITS EFFECTS ON LIVING CREATURES, AND THE
PRESENT ASPECT OF THE TREATMENT
OF THE POISONED.

By SIR JOSEPH FAYRER, K.C.S.I., F.R.S.

(Concluded from page 241.)

Treatment.—The result of my experience is that so far no physiological antidote to snake virus is known, and that when the full effect on the respiratory centres is produced, remedies are of little, if any, avail, albeit, when the poison has entered in smaller quantities, treatment may be of service on general principles. Viewing the apparent analogy between curara and snake-poisoning, death in both being caused by paralysis of the respiratory apparatus, Dr. Lauder Brunton and I hoped that, by artificial respiration and supporting the body temperature, we might keep an animal poisoned by snake virus alive until elimination had taken place; and the result of some experiments justified the anticipation to some extent, for animals were kept alive for many hours, but succumbed at length when the artificial respiration was withdrawn. Mr. V. Richards, who repeated our experiments in India, succeeded thus in keeping an animal alive for days, though it, too, succumbed finally. In the case of curara, artificial respiration is completely suc-

cessful, though not so in snake-poisoning. This seems to show that the damage done by the snake-poison is of a more serious and permanent nature than that by curara. I would encourage efforts to devise any method of treating snake-poisoning in whatever degree it presents itself, for some means of neutralising the poison or of restoring the damaged nervous system and blood may still be discovered. At any rate, it is with snake virus as with other deadly poisons, there must be a quantity, however small, which, though dangerous, is not of necessity fatal; in such cases we may influence the result by treatment, and save life in some. But after long and repeated observation in India, and subsequently in England, I am forced to the conclusion that all the remedies hitherto regarded as antidotes are absolutely without any specific effect on the condition produced by the poison, and that such aid as we can give must depend on preventive and local treatment.

I will now briefly describe the measures to be adopted in the treatment of snake-poisoning, and especially refer to the permanganate of potash as a remedy.

The first and most important indication is to prevent the poison entering into the circulation; to this all else is subsidiary. The rapidity with which this takes place depends a good deal on the part of the body bitten, and on its vascularity. When the poison enters a vein, if the bite be inflicted by a vigorous snake, the result is generally rapidly fatal. Experiments on animals show that bites inflicted on parts, even where large veins are not implicated, produce their effects so rapidly that only immediate severance of the part or complete constriction can prevent absorption. It is necessary therefore, as quickly as possible after a bite has been inflicted, to apply a ligature above the wound, and so tighten it as to completely arrest the circulation. As it happens in 94 per cent. that the bite is inflicted on an extremity, this may frequently be accomplished. But in parts where no ligature or elastic bandage or cord can be applied, proceed at once to excise the bitten part; this, indeed, should be done in all cases, ligatured or not. Then make an incision through the bite, reflect the skin, expose the tissue wherever that is altered in colour, dissect it out, and be careful to remove every part of it; next apply cautery or some escharotic, or the permanganate solution, taking care that it reaches as much as possible in every direction where the poison may have infiltrated. After this is done the ligature may be relaxed, for if the virus be destroyed the danger of its entering the circulation is past. Should it have already entered, as is only too probable, all that can be done is to give stimulants, keep the patient warm, at rest, and if the respiration begin to fail use artificial respiration, and endeavour to keep him alive till the poison be eliminated; the temperature should be maintained. In 1869 I gave instructions for the treatment of snake-bite, and, excepting that I would substitute Esmarch's bandage for the ligature recommended by Dr. Wall—that permanganate of 5 per cent. solution should be applied to the wound when the venom has been carefully dissected out, or injected when it has not been cut out—I have nothing to alter in these suggestions. Suction, being unlikely to be of much avail, is practically useless to the patient and dangerous to the operator, and it should be discouraged, and not relied on. Where the poison has happily been limited to the seat of inoculation, and in cases where no great quantity of virus has been absorbed, we may hope to do good, but where the poison has entered the circulation in larger quantities and the physiological symptoms are developed, the prognosis is exceedingly unsatisfactory.

Instructions.—As soon as possible after a person is bitten by a snake, apply a ligature made of a piece of cord, or an elastic bandage, round the limb or part at about two or three inches above the bite. Introduce a piece of stick or other lever between the cord and the part, and by twisting, tighten the ligature to the utmost. After the ligature has been applied cut the punctures to the depth of a quarter of an inch with a penknife or other similar cutting instrument; let the wounds bleed freely; or, better still, excise the punctured part and all the infiltrated areolar tissue subjacent to it. Apply either a hot iron or a live coal to the bottom of these wounds as quickly as possible, or inject into the subcutaneous cellular tissue a solution of permanganate of potash—5 per cent., or some carbolic or nitric acid. If the bite be where a ligature cannot be applied, with a sharp penknife cut out the bitten part and all the infiltrated cellular tissue to the depth of a quarter or half an inch. Then apply the hot coal or hot iron to the very bottom of the wounds, or