A CASE OF MERCURIAL POISONING AND ITS TREATMENT

BY

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A case of acute mercurial poisoning is described below in which there were severe gastro-intestinal symptoms and anuria lasting six days. The 5 ml. of urine passed the preceding day contained red and white blood cells and many hyaline casts—albuminuria was slight; oedema was absent. Recovery set in rather suddenly on the eighth day, when the kidneys began to secrete a pale, low-specific-gravity urine containing microscopical blood, excess of leucocytes, and numerous hyaline and granular casts. The urine was normal by the twenty-fourth day. Apart from symptomatic remedies the basis of treatment was intravenous therapy. In all, 32 pints (18 litres) of fluid were given intravenously.

Report of Case

The patient, a young man of 20, was admitted in March, 1946, with severe abdominal pain, vomiting, and diarrhoea. Sixteen hours before admission he had taken 3 g. of corrosive sublimate in a glass of water. Half an hour later he vomited blood, and suffered severe abdominal pain with the passage of fresh blood per rectum. Three hours later there was frank haematuria. He was seen by a doctor, and given the whites of three eggs in a glass of milk and an injection of morphine, 1/4 gr. (16 mg.). The morphine was repeated in three hours because of great pain and restlessness, and he was then removed to hospital by ambulance. Blood-stained urine was passed during transit, but the specimen was not saved.

On examination the patient looked very ill and was obviously in great pain. There were bouts of colic, followed by the passage of blood-clots and mucus per rectum, about every half-hour. Vomiting was frequent, and the vomit consisted of bile and blood-clots. The mental condition was clear. Abdominal movement was restricted; there was diffuse tenderness, and gentle palpation was followed by violent bowel action and much pain. There was also some tenderness in the loins. His blood pressure was 152/74.

Progress and Treatment

On the second day pain, diarrhoea, and vomiting continued; stools were passed at the rate of one an hour and were darker in colour. During the day the patient passed 5 ml. of urine containing a small quantity of albumin. The centrifuged deposit showed occasional red blood cells, white cells, and many hyaline casts. Kaolin poultices were placed over the loins. Water and sips of iced orangeade were taken. Restlessness and pain were treated with morphine, 1/4 gr. four-hourly. Frequent vomiting continued, and much fluid was lost in the faeces. An intravenous drip was started in the left arm, and fluid was given at the rate of 4 pints (2.27 litres) in 24 hours—namely, alternating pints of dextrose-saline (4.8% and N/5), sodium sulphate (4.2%), and normal saline.

By the third morning the patient was very drowsy and there was twitching in the limbs. The tongue was covered with brown fur, and he complained of severe headache. Morphine, 1/4 gr. four-hourly, and the intravenous drip were continued. He vomited 1 litre during the day, but passed no urine. There was little improvement over the next three days, though the abdominal pain was less and the stools not so frequent. No urine had been passed since the original 5 ml. after admission. The patient was now mentally alert, and worried about himself. Blood urea was 236 mg. per 100 ml., and the patient was very ill. All veins except one had now been utilized, and the intravenous administration of fluid was discontinued. On the seventh day the abdominal tenderness had disappeared, the diarrhoea and vomiting had improved slightly, but the patient was hiccuping continuously. The plantar responses were extensor. Blood pressure, 174/84; blood urea, 350 mg./100 ml. Morphine was changed to heroin, 1/8 gr. (8 mg.) four-hourly, as this was thought less likely to aggravate vomiting.

On the morning of the eighth day the patient's condition was critical. No urine had been passed since the second day (5 ml.). Intravenous therapy had been stopped for 24 hours on account of technical difficulties, and was begun again—namely, dextrose-saline at the rate of 4 pints (2.27 litres) in 24 hours. During the day and following night 1.85 litres of urine was passed, and the patient's condition improved. The next day there was a pronounced improvement: 1.9 litres of urine, of specific gravity 1010, was passed; twitching and headache abated; and the patient was able to take rusks and 1.7 litres of fluid by mouth. Blood urea, 300 mg./100 ml.; haemoglobin, 65%; W.B.C., 21,000.

Over the course of the next three days intravenous dextrose-saline was continued and the diuresis and general improvement were maintained. Vomiting was less, and the patient was able to take solid

food in the form of eggs and custard, calves'-foot jelly, rusks, and pounded fish. At the end of this time the last vein had thrombosed, and the drip was discontinued. Blood urea, 380 mg./100 ml.; plasma chlorides, 419 mg. NaCl/100 ml.; alkali reserve, 42 vols. CO₂%; blood pressure, 150/60. The heroin had been discontinued, and phenobarbitone, 1/2 gr. (32 mg.) four-hourly, was given in its place. In spite of the high blood-urea figure the patient felt well and was cheerful.

On the 17th day after admission the blood urea was 170 mg./100 ml.; plasma chlorides, 487 mg. NaCl/100 ml.; alkali reserve, 52 vols. CO₂%. The centrifuged deposit of each specimen of urine passed showed successively diminishing numbers of red and white blood cells, and all showed persisting hyaline and granular casts. On the 24th day the patient was his normal self, eating well, with no vomiting, and passing one semi-solid darkish stool per day. The urinary output was in the region of 2 litres in 24 hours; the blood urea was down to 63 mg./100 ml.; plasma chlorides had been raised to the normal level of 576 mg. NaCl/100 ml., helped by the giving of 5 g. of NaCl daily in a litre of lime-juice; alkali reserve, 56.7 vols. CO₂%; blood pressure, 148/63. The urine contained no albumin and the centrifuged deposit was normal.

THE SYNDROME KNOWN AS "REITER'S DISEASE"

(A TRIAD OF POLYARTHRITIS, URETHRITIS, AND CONJUNCTIVITIS)

BY

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In 1916 Reiter, in Germany, reported the case of a young man in whom the presenting clinical features were the triad of polyarthritis, urethritis, and conjunctivitis. Fever and, at the onset, bloody diarrhoea were also present. The patient made a complete recovery. No previously recognized pathogen was discovered to account for these inflammatory reactions, but Reiter believed he had incriminated a spirochaete, for which, however, there has been no subsequent evidence. This syndrome of the "inflammatory triad" does apparently represent a disease *sui generis*, its aetiology being unknown. Kuske (1939) noted cutaneous eruptions to be frequent concomitants, and others have found a haematuria. Recently Miller and McIntyre (1945), in America, reviewed the condition and found that about 65 cases had been reported, mostly in Germany, some in America (e.g., Bauer and Engleman (1942), 6 cases). In a lecture in this country on keratoderma blennorrhagica, Harkness (1945) remarks in passing upon several cases of Reiter's disease seen by him, and notes that 16 cases have been reported in the literature in combination with this particular skin lesion. Apart from this brief mention I have not found a report on the syndrome in British journals.

Clinical Manifestations

The patient is usually a young adult male, presenting with an irregular fever and any one or more of the triad of essential symptoms. If one (e.g., the arthritis) occurs alone at first, the others (i.e., urethritis and conjunctivitis) develop later. The *conjunctivitis* is bilateral, catarrhal, or, more usually, profusely purulent, with episcleritis and sometimes an iritis or keratitis. There are local pain, weeping, and photophobia, but permanent damage to the eye does not occur. No constant organism can be found in conjunctival smears. The *arthritis* is manifested by severe pain and tenderness, occurs in the large joints of the limbs, is usually polyarthritic and often flitting. Synovitis is frequent, fluid developing rapidly and in considerable amount. This fluid may be purulent, but is always sterile. The *urethral discharge* is abundant and purulent, accompanied by surprisingly little frequency of, or pain on, micturition. Gross haematuria may occur (as in the two cases of Miller and McIntyre) and renal complications have been described. The urine contains red blood cells in varying numbers, clumps of pus cells, and a little albumin. The discharge presents no evident organism and is sterile on attempted culture. Erosions and small ulcers may appear on the penis from the constant irritating discharge.

Diarrhoea, sometimes severe and bloody, may be present at the onset, and several types of more or less generalized rashes have been described. The erythrocyte sedimentation rate is

raised, there may be a mild hypochromic anaemia, and the leucocytes are normal or slightly raised in number. Gonococcal fixation and Wassermann tests are negative. The disease is self-limited, though subject to recurrences, which may drag its course out into months. Complications are very rare.

Aetiology and Differential Diagnosis

Harkness claims to have demonstrated inclusion bodies in the discharge from the urethra and conjunctiva in five cases of Reiter's disease. Apart from this all efforts to discover an infecting agent have failed, although the hypothesis of virus causation is the most popular. Reiter's spirillum has not been seen since 1916. One thing seems certain—this is no venereal disease, and bears no relation to gonorrhoea or syphilis. There is no reason to believe that it is caused by gonococci "lurking in the background," as has been mooted.

The inflammatory triad of symptoms may occur in *gonococcal infection*, but here there will be a history of venal contact, and of urethritis well preceding the other symptoms. Pus from all sources will contain gonococci (except that the conjunctivitis may be catarrhal, metastatic, and non-infective), the fixation test will usually be positive, the course and response to treatment different. *Secondary syphilis* might be confused on account of the fever, rash, and keratoconjunctivitis. Penile erosions also occur in both diseases, but differ in their appearance, time relation to other symptoms, and bacteriology. Syphilis could not account for the urethritis. *Rheumatic fever* may be simulated if flitting polyarthritis is the presenting symptom, together with fever and night sweats. Reiter's disease does not respond to salicylates.

Treatment

Miller and McIntyre consider that putting the patient to bed for six weeks to three months is all that can be done. They found penicillin and sulphonamides to have no effect on their two cases. Protein shock therapy has been used in Germany, apparently with some success, especially by Beiglboeck (1943). Sulphadiazine, however, seemed to have a good effect in the cases noted below.

Case Reports

Two patients with Reiter's disease were seen in the Bahamas last year—one a British airman and the other a coloured Bahaman. Though they presented within a fortnight of each other there was no history of close contact between them to render likely the transfer of infection. Their stories were briefly as follows.

Case I

A Scottish leading aircraftman aged 30, employed as a batman for 4½ years, complained on April 5, 1945, of pain in and limping on the left foot. This had been coming on in the mornings for about three weeks, and had got worse. The previous January he had been in the R.A.F. hospital with a painful swollen left knee, which settled down completely after it had been opened and the pus had been evacuated. This pus was apparently sterile. The patient (who was a very reliable and honest person) denied intercourse since leaving England. There was no history of trauma.

On examination the patient was rather flushed and feverish. His skin was bathed in sweat and his temperature was 101° F. (38.3° C.). The body of the left foot was red, hot, and swollen, with thickening and some oedema of the tarsal periarticular tissues. The ankle was less affected, but showed some painful limitation of flexion and extension. There was also a moderate bilateral catarrhal conjunctivitis with episcleritis, of three days' duration according to the patient. There were no other noteworthy signs in any system. By next morning the right knee had become very swollen, warm, and tender, and there was a large synovial effusion. A little serous, slightly purulent fluid was aspirated for examination. No organisms were found in it, and it remained sterile on attempted culture. A full blood count was normal, white blood cells numbering 6,000, with 60% polymorphs. On the 14th the conjunctivitis, which had subsided fairly rapidly, flared up again, this time with rather more muco-purulent discharge. This subsided within a week. On the 18th a yellowish profuse purulent urethral discharge started, and within twenty-four hours two small erosions had appeared on the glans penis. No organisms could be found in the discharge, and rectal examination showed nothing abnormal. The two-glass urine test, with threads and debris in the first glass, suggested an anterior urethritis. No facilities were available for performing the gonococcal fixation test, but the Kahn test was negative. There had been little or no change in the affected joints, and there were fleeting pains in other joints, including those of the upper limbs.

On the 20th a course of sulphathiazole was started—8 g. the first day and 6 g. on succeeding days. The drug was stopped after a total of 32 g. had been given. The fever, which had remained low and intermittent, with peaks of 100–101° F. (37.8–38.3° C.), since admission, stopped on the fourth day of the course, and stayed down. The urethral discharge also subsided and did not recur. Flitting joint pains remained. Tender purple raised irregular areas appeared on the palm of the right hand but disappeared within a few days.

By May 23 a gradual subsidence of joint pains and swelling had occurred. The most bothersome joint was now the right ankle, which remained somewhat swollen and painful, causing a limp. The patient was discharged on June 6. The ankle continued to give him a little trouble for some weeks, but gradually got better.

Case II

On April 19, 1945, a coloured Bahaman aircraftman aged 20 complained of a pain in the left chest and left shoulder while carrying his meal to his table at lunch-time. After this he felt sleepy and unwell, and experienced some pain on inspiration. There were no other complaints. He denied sexual intercourse since January. The previous year he had been in the civilian hospital with a urethral discharge, but its nature was not known.

On examination he was found to have a temperature of 102° F. (38.9° C.), with a pulse of 106. His left lower intercostals were tender to digital pressure. He had a profuse purulent urethral discharge, but was vague as to its duration, though quite definite that it was very recent. Further examination, including a rectal one, revealed nothing significant. A blood count and a skiagram of the chest were both normal. The discharge showed pus and epithelial cells, but repeated examination failed to reveal gonococci. By the 23rd the pains in the chest had gone, but the patient was experiencing fairly severe flitting polyarthralgia. The affected joints would become painful, tender to touch, and warm, with restricted movement, but there was no inflammatory localization. He was given a course of sulphathiazole—26 g. in four days.

On the 25th a bilateral catarrhal conjunctivitis started. This was never severe and cleared up within a few days. By the 28th the urethral discharge was over, and the low irregular fever, present since admission, had stopped. He was discharged on May 1, and I have not heard of any recurrence.

It is realized that this case is not so definite as the first. It might be objected that the conjunctivitis was a manifestation of sulphathiazole sensitivity, but this is unlikely to occur before the fifth day (M.R.C. War Memo. No. 10, 1945). Chronic gonorrhoea is improbable without evidence of genito-urinary involvement deeper than the urethra, and would not be expected to clear so rapidly simply on chemotherapy, especially as the patient's urethritis had been treated with sulphonamides the previous year. Considered together, the febrile polyarthralgia, purulent bacterial urethritis, and conjunctivitis make Reiter's disease a highly probable diagnosis.

There was another coloured Service man the diagnosis of whose illness had been in doubt, but who, in retrospect, showed some features suggestive of Reiter's disease, though without a urethritis having been discovered.

Case III

A lance-corporal cook aged 29 was admitted to hospital on March 21, 1945, for pain in the left lower limb. A year earlier he had fallen and twisted the left ankle and foot, since when he had intermittent aching in the region of the first metatarso-phalangeal joint, spreading up the leg as far as, and into, the knee. More recently he had been almost unable to walk, and had been off duty for 18 days. There were no other complaints and no history of venereal disease.

On examination there was found to be loss of muscle power, without evident wasting, in all parts of the left leg. There was painful restriction of movement at the left knee- and hip-joints, but inflammatory signs were absent. As in the other cases, a low irregular fever, with peaks of 101 and 102° F. (38.3 and 38.9° C.), was present, and remained for nearly three weeks. There were no other noteworthy physical signs. Skiagrams of the limb were normal, and the surgeon reported that the disability was not an orthopaedic one. On the 24th the patient complained of pains in the eyes, lacrimation, headache, and photophobia. He had an acute sero-purulent conjunctivitis with episcleritis, but the deeper structures were normal. Two days later an itching papular eruption had appeared on the chest, also involving the penis, and to a lesser extent the abdomen. Benzyl benzoate, applied as a therapeutic test, was ineffective. No organisms were found in the ocular discharge: nor could they be at any time. The blood count was normal and the Kahn test negative.

The pains in the leg had almost cleared by the 28th, but some fleeting pains were now being felt in the shoulders. The rash had

spread to involve the whole body except the face, and included the hands and feet. It was only mildly irritating. The individual lesions were small, round, regular, uniform maculo-papules. They involved the extensor surfaces more than the flexor. Two of the papules on the shaft of the penis had broken down and ulcerated; examination of these was negative for treponemata and other organisms. Centrifugal scaling of the individual spots started next day, reminiscent of pityriasis rosea.

On the 30th the eyes felt better, but the sight was "dim." The conjunctivitis had largely subsided, but there was a bilateral circum-corneal injection with clouding of both corneae, which presented a superficial punctate keratitis. This was treated with atropine drops and a potassium iodide mixture, and there was a slow improvement. By April 30 the eyes were quite clear, and the rash nearly so. The patient was discharged. Unfortunately his eyes relapsed a little over a month later and the rash recurred, though in lesser degree. This time the eyes did not improve so quickly, though partial intermittent remissions occurred. When last seen, in August, keratitis was still present.

Conclusion

It is at least possible that Reiter's disease may occur without one of the three "essential" inflammatory symptoms, but until the causal agent is discovered this is likely to remain a speculation. Incidentally, two of Harkness's six cases of Reiter's disease with keratoderma blennorrhagica failed to show any ocular manifestations. One might, indeed, go further and suggest that perhaps a single symptom may, at times, represent an incomplete form of the whole disease, so bringing forth a possible relationship between Reiter's disease, "non-specific urethritis," kerato-conjunctivitis of unknown aetiology, and "palindromic rheumatism."

The main importance of an awareness of the syndrome lies in its distinction from chronic gonorrhoea, thereby altering the prognosis and avoiding hectic treatment and the venereal stigma. It is probable that Reiter's disease occurs much more commonly than is recognized, but it is considered that the symptom-complex described above is pathognomonic and should usually be unmistakable.

I should like to express my thanks to Prof. Findlay and Prof. Witts for their help in preparing this paper.

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Medical Memoranda

Reiter's Disease

In 1916 Reiter described a triad of symptoms characterized by conjunctivitis, urethritis, and arthritis; but very little seems to have been written about it in this country. Colby (1944) said that "Since the initial symptoms of Reiter's disease are frequently related to the urinary tract, the urologist is most apt to see these patients." The intention of his communication was to bring the characteristic triad of symptoms to more general notice. Rosenblum (1945) remarked on the paucity of the literature and the general lack of awareness of the condition. Quite recently Gersh and Reich (1945) described a case of Reiter's disease in a white soldier aged 19. He had conjunctivitis, arthritis, and urethritis.

Such literature as is available stresses the fact that this syndrome, consisting of conjunctivitis, urethritis, and arthritis, may, naturally enough, be mistaken for gonorrhoea or some other condition. In some cases the original diagnoses were rheumatic fever, gout, acute conjunctivitis, prostatitis, acute arthritis, and non-specific urethritis. Because of the lack of information in this country, I think it worth while briefly to describe a case of so-called Reiter's disease which came under my care.

CASE REPORT

The patient was a male German P.O.W., aged 21, admitted with a provisional diagnosis of gonococcal infection not yet diagnosed. Investigations had yielded negative results and he had had sulphonamide therapy. The history stated that the illness started with a cold three weeks before, followed immediately by balanitis, urethritis, conjunctivitis, and painful swelling of the right knee-joint, some slight loss of weight, frequency of micturition, and a fluctuating

temperature. He said that both knees were very painful and that he had had other joint pains; the frequency had settled. In other respects his statement agreed with the written history. He admitted intercourse on a few occasions several months before the illness began.

Examination showed marked bilateral conjunctivitis; both knees were hot, swollen, and tender; he had an abscess on the right calf, boils on the left calf, and a discharging right ear. There was a mild pyrexia. Further examination showed definite keratitis in the right eye, but no perforation of the right ear—external otitis only.

The gonococcal complement-fixation test showed unsatisfactory fixation of complement in absence of antigen. A urethral swab revealed many pus cells, but only a few diphtheroid bacilli were present. No gonococci were seen. A swab from the eyes produced very few diphtheroid bacilli, a few pus cells, but no gonococci. A swab taken after prostatic massage revealed a very large number of mixed organisms, chiefly staphylococci and Gram-negative bacilli, but no gonococci. A full blood count showed: red cells, 4,750,000; haemoglobin, 78%; colour index, 0.82; leucocytes, 11,550. The urine was alkaline with a slight trace of albumin but no sugar. The deposit showed very few pus cells, very few epithelial cells, many triple phosphates, but no casts or organisms.

A German medical officer, also a P.O.W., to whom I mentioned the case, said that it was very common on the Eastern front. It was believed by them to be a virus disease and was usually treated with amidopyrine.

This patient was treated with mist. sod. sal. N.W.F., 1 oz. (28 ml.) 4-hourly; atropine in castor oil, and then penicillin drops, to the eyes. The abscess was incised and drained. Dettol baths were given for the balanitis. The urethral discharge ceased about two days after admittance; the arthritis and balanitis cleared in a few weeks, skin extension having to be applied to the right leg. The eyes were very resistant to treatment and he had numerous relapses. When the right eye was almost clear he had diffuse keratitis of the left eye.

The patient was finally discharged from hospital just over four months after admittance and five months from the first appearance of the symptoms.

My thanks are due to Dr. A. R. Grant, medical superintendent, for permission to publish this case.

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Elongated Styloid Process encountered during Tonsillectomy

In the course of some 450 tonsillectomies performed under local analgesia in adults this is the first case of noticeable elongation of the styloid process I have encountered. It may therefore be considered interesting enough to merit recording.

CASE REPORT

On April 5, 1946, during induction of local analgesia for the removal of small septic tonsils in a woman of 44, the point of the needle encountered a bony prominence at the level of the lower pole of each tonsil. Dissection of the tonsils presented no exceptional difficulty; the plane of cleavage between the capsule of the tonsil and the pharyngeal aponeurosis had to be very strictly adhered to. After removal of the tonsils a pointed and bony-hard prominence could be seen in the lower third of the tonsillar fossa on each side. This prominence was produced by the tip of the elongated styloid process bulging downwards, forwards, and inwards the lateral wall of the tonsillar fossa formed by the superior constrictor muscle of the pharynx, lined on its inner surface by the glistening pharyngeal aponeurosis. Recovery was uneventful.

COMMENT

This moderate bilateral elongation was symptomless, unlike the more pronounced unilateral elongation, of which a case was reported by A. J. d'Abreu (1945), and which was accompanied by discomfort in the neck and throat and displacement of the tonsil.

Elongation of the styloid process is explained by the following morphological facts. The styloid process of the temporal bone, the stylo-hyoid ligament, and the lesser cornu of the hyoid bone represent the stylo-hyal, epihyal, and cerato-hyal portions, respectively, of the bar of the second visceral arch. The stylo-hyoid ligament, which is attached to the tip of the styloid process and to the lesser cornu of the hyoid bone, is the morphological continuity of the styloid process, and may undergo partial ossification.

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