ear and tubal conditions, especially catarrhal ones, are found with great frequency in association with septal deviation, but the suggestion is made that these are most commonly seen after the establishment of sinus disease. When severe it may cause pain by pressing on the lateral nasal wall. The blockage of sinus drainage is by far the most troublesome effect and the one calling most persistently for relief. In these cases the septal deflection is commonly most acute high up, and many, probably the majority, are the result of injury. Is there any difference between the effect of a sudden change of the size and shape of the nasal cavity by traumatic deviation of the septum and the result of a septum deflected during development? It seems reasonable to suppose that, given equal conditions of infection, the case with a traumatic deviation of the septum will be likely to have more trouble from a sinusitis than the developmental case or the case of long standing. In the former there is not only the effect of the trauma but also the larger turbinates. In the latter there has been an accommodation of structures and functions to meet the irregularities, as, for example, the shrinking or the smaller development of turbinates. Why does a septal deflection produce a greater liability to disease? A sudden traumatic change in aeration and drainage is understandable as a cause of trouble; but, in regard to other bodily aberrations, are the parts concerned more susceptible to bodily disease than those absolutely normal? If so, and if the septal deflection is looked upon as an abnormality, then those liable to disease from this cause are in the majority. There certainly seems to be a tendency for diseased conditions such as sinusitis to be found more often on the side of the septal deflection. Is this definitely due to the presence of the septal deflection, or does the septal deflection not rather make drainage difficult and so the relief of disease and symptoms? Is not sinus disease, at first, part of an ordinary rhinitis, showing itself as an entity only when the resolution does not progress, as in the nasal cavity itself? In those cases of septal deflection with no symptoms Nature has made compensation for the difference in size of the two nasal cavities—for example, the larger inferior turbinate on the concave side. The position of the septum does not seem to have any pathogenic effect: its action is purely physical, and is shown after the onset of disease, especially by interfering with efficient drainage of sinuses.

Grounds for Operation

It is interesting to wonder on what grounds we should perform submucous resection of the septum. I suppose most of us would agree that a badly deflected septum obviously obstructing breathing to the patient's discomfort, a similar septum preventing the drainage of sinuses and impeding the return of the patient to good health, or a septum by its pressure on opposing surfaces causing acute pain, are all circumstances warranting procedures for moving the septum out of the way. Most of us would agree that the operation of submucous resection in one form or another is best suited to this purpose. Attention to the septum in this way will reduce the necessity for turbinotomy to a minimum. Apart, however, from these more insistent conditions, many minor disorders of the nose and its vicinity are found in conjunction with a septal deflection where the question of operating on the septum also frequently arises. Possibly in this group of cases our tendency is to interfere too often with the septum, and it is, I think, here that the results of such interference do not seem to favour it. The results, at

any rate in some hands, are disappointing, and, I believe, for at least two reasons. First, the psychological one—both for ourselves and for our patient—that, although generally no harm is done, our surgical procedure has not removed the original disorder. Secondly, that owing to the presence of so definite a condition as a septal deviation many minor but more persistent disorders escape our notice. Even although so many deflections produce no symptoms, can we, with one such individual, ever be right in advising the straightening of the septum as a preventive of serious disease in view of the ever-present possibility of nasal infection; or should we rather wait for the acute symptoms to arise and then do our submucous resection in case trouble should arise again? This is an age of prevention in medicine, but I think there will be few among us who would be willing to go to these extreme lengths “just in case.”

CALCIUM MANDELATE AND SULPHANILAMIDE IN TREATMENT OF URINARY INFECTIONS

BY

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Mandelic acid has its well-defined indications in the treatment of urinary infections. It is most efficacious against *B. coli* and enterococci, but usually fails in *B. proteus* and staphylococcal infections. Schnohr (1937), Hryntschak (1937), Melton and Rosenheim (1938), and Kunstmann (1938) report series of cases treated with the calcium salt of mandelic acid. This salt is an insoluble tasteless powder which does not mix with water and can be given with milk or jam. Calcium mandelate is marketed by British Drug Houses as mandecal, and this was the preparation used in the present series of tests.

Recently the group of compounds of which sulphonamide, prontosil, and streptocide are the best-known members has been used extensively in the treatment of urinary infections (Garrod, 1938; Cokkinis, 1938). To compare the efficacy of calcium mandelate with the sulphonamide group of urinary antiseptics we took two series of cases of urinary infections and tried to treat each series, according to indications set out below, with the respective drug.

Indications for the Use of Mandecal.—Mandecal has the same indications as all the other mandelates. The renal function should be good, so that the urine may speedily attain a pH of 5.5 or less. Mandecal is most effective against *B. coli*.

Indications for the Use of Sulphanilamide.—Sulphanilamide exerts its bacteriostatic action best in an alkaline medium. The kidney function may be good or moderately impaired. It is equally effective against *B. coli*, haemolytic streptococci, and *B. proteus*. It does not act on enterococci.

Two questions arise: Which drug fulfils the optimal requirements in sterilizing the urine in the shortest time, with the least amount of toxicity, in a given infection? and Which treatment is the cheaper?

1. Mandecal

Mandecal was found to acidify the urine of healthy individuals very quickly. In a self experiment the urine became strongly acid within eighty minutes of the in-

gestion of 4.5 grammes of mandecal (pH 7.6 to pH 5). On ingestion of mandecal, free mandelic acid is rapidly and almost completely excreted by the kidneys: the calcium is fixed to an acid radical and an acid urine is excreted to maintain the acid-base balance.

TABLE I.—Cases treated with Mandecal (71 per cent. Cures)

Type of Case	No.	Cures	Failures
(1) Chronic urinary infections	12	9	3
Pyonephrosis	1	—	1
(2) Urinary infection occurring together with :			
Chronic nephritis	1	—	1
Focal nephritis	1	1	—
(3) Hypertension	2	2	—
Microcytic anaemia	2	1	1
Rheumatoid arthritis	1	—	1
Diabetes mellitus	3	2	1
Ulcerative colitis	3	2	1
Various conditions	5	5	—
Total	31	22	9

Causative Organisms.—In all but two cases *B. coli* was the organism concerned, the exceptions being two mixed infections: one with enterococci and haemolytic streptococci, the other with *B. coli* and haemolytic streptococci.

Clinical Results.—Using a standard dosage of 4.5 grammes of mandecal four times daily, we could prove that calcium mandelate acidifies the urine sufficiently to be an effective urinary antiseptic. The salt is pleasant to take, and in no case was the vomiting noticed which is so common after ammonium mandelate medication. The cases treated have been divided into three groups: (1) those showing signs and symptoms of cystopyelitis; (2) those suffering from haematogenous bilateral renal disease and concurrent urinary infections; and (3) cases in which a bacilluria was discovered on routine examination, without clinical symptoms of urinary infection. Those cases in which treatment failed are shown in Table II.

TABLE II.—Cases in which Treatment Failed

Diagnosis	Urine Culture	Duration of Treatment	Remarks
Group 1 :		Days	
Cystitis (male aged 52)	Heavy mixed inf., enterococci and haem. strept.	10	
Pyelitis (female aged 5)	Moderate growth of coliform bacilli	17	Urine difficult to acidify; lowest pH 6.7
Cystitis (male aged 21)	Heavy <i>B. coli</i>	12	pH never below 6.1
Cystitis (male aged 20)	" "	10	
Group 2 :			
Chronic nephritis	<i>B. coli</i> and haem. strept.	10	Could not concentrate sufficiently; S.G. 1010
Group 3 :			
Microcytic anaemia	<i>B. coli</i>	11	
Rheum. arthritis ..	"	14	
Ulcerative colitis	"	14	
Diabetes mellitus	"	5	Left ward before investigations were finished

The duration of treatment varied from three to twenty-six days, the average being nine days. Hryntschak is of the opinion that calcium mandelate should not be used for periods longer than ten days, but I have never observed any nausea coming on after this time. No toxic symptoms were noticed, and the only difficulty encountered in taking the powder was due to the fact that mandecal floats on water.

The results compare favourably with those obtained with ammonium mandelate (Holling and Platt, 1936; Kunstmann, 1938). Hryntschak and Rosenheim both agree that mandecal is easier to take and less nauseating than ammonium mandelate; Kunstmann, however, found it less palatable. We can fully confirm the former authors' findings.

The cost of treatment with mandecal for a period of seven days amounts, according to the manufacturers (B.D.H.), to 8s. 4d. (hospital price).

2. Sulphanilamide

Since 1935 the number of favourable reports on the treatment of urinary infections with sulphanilamide has been steadily growing. This drug has the advantage of rendering the urine slightly alkaline (Marshall *et al.*, 1938), and can be used during the acute stages of pyelitis and cystitis. It is directly bactericidal, and is more active in an alkaline medium (Helmholz, 1937a, 1937b).

TABLE III.—Patients treated with Sulphanilamide (75 per cent. Cures)

Type of Case	No.	Cures	Failures
Acute pyelitis	2	2	—
Chronic pyelitis	3	1	2
Chronic urinary infection	2	2	—
Urinary infection combined with :			
Acute nephritis	2	2	—
Chronic nephritis	2	—	2
Chronic peritonitis	1	1	—
Diabetes	3	2	1
Myxoedema	1	1	—
Ulcerative colitis	1	1	—
Pulmonary tuberculosis	1	1	—
Rheumatoid arthritis	2	2	—
Total	20	15	5

Clinical Results.—A standard dose of 1.5 grammes of sulphanilamide a day was used, as suggested by Kenny *et al.* (1937). Only one toxic sign was noticed—namely, cyanosis. It occurred in three cases: one was an acute nephritis, the other two being chronic renal failure where isosthenuria already existed. All three patients lost their cyanosis quickly after cessation of treatment with sulphanilamide. The cases were again divided into three groups in the same manner as those treated with mandecal.

Failures :

Chronic cystopyelitis in a man of 52; heavy mixed infection with enterococci and haemolytic streptococci. Treatment was continued for only ten days because the patient left hospital. (Previous mandecal treatment without success.)

Chronic pyelitis in a man of 34. Left hydronephrosis, right kidney not functioning at all. Enterococci and lactose-fermenting coliform bacilli. Patient developed cyanosis; drug stopped on tenth day. Chronic nephritis. Both this and the previous patient were already beyond an expectation of cure. Both had isosthenuria and rising non-protein nitrogen. One was a case of mixed infection with haemolytic streptococci, the other with enterococci and coliform bacilli; the latter developed cyanosis after seventeen days' treatment, when the drug was discontinued.

Diabetic cystitis in a female of 65 due to *Staph. aureus*. Treatment for a fortnight did not remove the infection. This is interesting in view of a finding of Becker (1937), who reported good results in staphylococcal cystitis.

The duration of treatment varied from three to twenty-seven days, with an average of ten days. The cost of treatment was about 6d. (hospital price).

Causative Organisms in Sulphanilamide Series

	Cures	Failures
<i>B. coli</i>	8	—
<i>B. coli</i> and haem. strepts. .. .	3	1
<i>B. coli</i> and enterococci .. .	1	2
Enterococci and haem. strepts. .. .	—	1
<i>B. coli</i> and <i>B. proteus</i> .. .	3	1
<i>Staph. aureus</i>	—	1

(The mandecal series, with only two exceptions, contain infections with *B. coli* according to the indications set out above.)

Conclusions

The danger of neglecting urinary infections is only slowly being realized. Evidence is accumulating that when they are insidious in their onset they may lead to a form of renal failure with contracted kidneys which shows certain typical pathological changes (Fahr, 1938). It is therefore necessary to treat all cases of urinary infection, however slight, until the urine becomes sterile.

Two drugs are at our service. Mandelic acid is indicated in chronic infections with good renal function and concentrating power in the presence of pure *B. coli* infections. The calcium salt of mandelic acid is more pleasant to take and is as efficacious in sterilizing the urine as any other mandelate. The sulphonamide group of drugs is indicated in mixed infections and in the presence of haemolytic streptococci and *B. proteus*. Mandecal shows no toxic symptoms at all, whereas sulphanilamide in the dosage indicated brought on cyanosis in only three cases. No other toxic symptom was observed.

Summary

An account is given of two series of cases of urinary infection treated with mandecal and sulphanilamide respectively. Cures were obtained in 71 per cent. of the mandecal and 75 per cent. of the sulphanilamide series.

I wish to thank Dr. R. Platt for his kind criticism and for his permission to publish this paper. I am also indebted to British Drug Houses Ltd. for a supply of mandecal.

REFERENCES

- Becker, W. (1937). *Dtsch. med. Wschr.*, **7**, 221.
 Cokkinis, A. J. (1938). *British Medical Journal*, **1**, 1151.
 Fahr, Th. (1938). *Virchows Arch.*, **301**, 140.
 Garrod, L. P. (1938). *Lancet*, **1**, 1178.
 Helmholz, H. F. (1937a). *J. Amer. med. Ass.*, **109**, 1039.
 — (1937b). *Proc. Mayo Clin.*, **12**, 377.
 Holling, H. E., and Platt, R. (1936). *Lancet*, **1**, 769.
 Hryntschak, T. (1937). *Med. Klinik*, **33**, 1097.
 Kenny, M., et al. (1937). *Lancet*, **2**, 119.
 Kunstmann, H. (1938). *Münch. med. Wschr.*, **85**, 790.
 Marshall, E. K., et al. (1938). *J. Amer. med. Ass.*, **110**, 252.
 Melton, G., and Rosenheim, M. L. (1938). *Lancet*, **1**, 494.
 Schnohr, E. (1937). *Ibid.*, **1**, 1104.

H. J. Burstein (*Urol. cutan. Rev.*, 1938, **42**, 575) records a case of double kidney with Y-shaped ureter and ureteral calculus in a female infant, aged 18 months, in whom nephrectomy resulted in a cure. The child was in good health a year after the operation. The condition was an embryological malformation, and the symptoms of frequent micturition, pyuria, and fever were due to hydronephrosis, infection, and stone formation. The diagnosis was made by careful examination, including cystoscopy, retrograde pyelography, and intravenous urography. In the differential diagnosis congenital hydronephrosis, congenital idiopathic dilatation of the ureters, congenital ureterocele, hydronephrosis due to anomalous vessels and other causes, and polycystic disease of the kidneys, had to be excluded.

Clinical Memoranda

Localized Hypertrophic Emphysema

One of the debated causes of hypertrophic emphysema is often said to be intermittent or partial bronchial obstruction, and in this relation the following case may be of interest.

CASE REPORT

A Hindu of 28 years was killed in a motor-car accident, reliable evidence stating that there were no respiratory movements when the body was examined immediately after the collision. His health was stated to have been good, with the exception of a spasmodic, non-productive cough which he had had for some months, and which came on at weekly or fortnightly intervals and lasted for half an hour or more.

At post-mortem examination nine hours later the cadaver was that of a well-nourished adult. There were severe abrasions and contusions on the forehead, right cheek, occipital and suboccipital regions. There was fairly extensive basal haemorrhage and laceration of the pons. In addition, however, the postero-lateral segment of the middle lobe of the right lung had a number of small bullae on the surface, and it was much softer than the remainder of the lung. On dissection it became evident that a well-defined part of the right middle lobe was emphysematous. The bronchus supplying this section was traced, and just distal to its junction with the main bronchus to the middle lobe a small flap of the mucous membrane was found. The bronchus was three-eighths of an inch in diameter, and the flap, which was one-tenth of an inch in thickness, occluded five-eighths of the bore of the bronchus. There was a small plegget of mucus on the distal surface of the flap. Unfortunately it was impossible to preserve or photograph the specimen.

There was no clubbing of the fingers, and no other abnormality was found.

It appears that the flap of mucous membrane acted as a partial valve and gave rise to the localized hypertrophic emphysema. The bouts of coughing may have been caused by mucus occluding the bronchus completely.

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A Case of Complete Hypospadias

Cases of complete hypospadias with bilateral undescended testicles are relatively rare. The following case history may be of interest from both the anatomical and psychological aspects.

CASE RECORD

X. Y., aged 13 years 9 months, was admitted to hospital as a girl patient on January 29, 1938. He complained of a swelling in the right groin, which had been noticed only a few days previously. On examination he was found to have a sturdy physique of the male type: the shoulder girdle was broader than the pelvic girdle, the chest was flat and showed no signs of breast development, the muscles were well developed, and there was little subcutaneous fat. The distribution of pubic hair was of the male type, and he had well-marked hirsuties of the face. The penis was rudimentary, about one inch long, and it had a hooded prepuce. The scrotum was completely divided and resembled the labia majora. There were no labia minora. The urethral orifice was situated just below the base of the penis, above a rudimentary vagina, which was four inches deep and less than a centimetre in diameter. A lump was palpable in the right inguinal canal, and a smaller lump could be felt in the left groin.

Orchidopexy was carried out by Mr. J. F. Gill on January 31, 1938. At the time of operation the right testicle was found lying in the lower end of the inguinal canal; it was