

speculum has many advantages over the Killian type. The bell mouth concentrates the vision, is more easily held in place, is less annoying to a conscious patient, instruments are not as easily caught, etc. The author's speculum is the only one with the suction tube attached, and its usefulness is readily apparent.

Another of my instruments is (2) a guide with the compass principle. This is placed upon the lateral X-ray plate of the patient and set at an angle formed by the line of the nasal floor and a line drawn from the lower floor of the sphenoid sinus to the anterior inferior nasal spine. The guide is applied to the patient so that one arm rests on the nasal floor. The other arm will indicate on the septum, the lower line of the section of the frame-work of the septum to be removed. A glance at the X-ray will give the necessary height of the section.

In addition, there are: (3) various saws to replace chisels for the section, and (4) a back cutting chisel to prevent injury to the pituitary gland while removing the superior (or posterior) sphenoid wall. These complete all the new instruments I have perfected up to the present time.

Operative Results

Mortality figures are variable: endo-cranial operations 30 to 40 per cent (Frazier): endo-nasal 11 per cent (Hirsch), 12 per cent (Cushing), 4.5 per cent (Frazier). The therapeutic results of operations are somewhat favorable. Hirsch states that in 26 operations, of which 3 were fatal, 15 patients

had durable cure or amelioration of the symptoms, 5 slight relief of symptoms and then relapses, and 3 had no relief. No improvement in the acromegaly, adiposity, etc, seems proved, though their advance may be retarded.

The improvement is seen in the relief of the pressure symptoms of the pituitary on surrounding structures, such as cranial hypertension, headache, visual disturbances, etc. However, as in all dangerous conditions, the earlier the operation, the better the results. For instance, if an eye is blind, the sight is not restored by the operation, but if the visual field is not entirely destroyed but only contracted, it will always enlarge after operation.

Thus, I ask again; Since the roentgenologist and neurologist can diagnose a condition which is eventually going to the surgeon, why wait for any late symptoms?

Conclusion

I wish to emphasize:

1. Pituitary disease is really a surgical condition.
2. The earlier surgery is applied the better the results.
3. The intra-cranial operation must be abandoned.
4. The intra-nasal operation belongs to the rhinologist.
5. Improved instruments will reduce the operative mortality still lower.

1315 North 15th Street.

Ammonium Chloride and Novasurol

The Use of, as a Diuretic*

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In view of the increasing number of articles appearing in the medical literature concerning the use of ammonium chloride and novasurol, some of which are very enthusiastic, others less so, and a few even issuing a note of warning against their use, perhaps it is well to make a general survey of the reports that we have at our disposal and to present a case which we may consider as illustrative.

The diuretic action of ammonium chloride is familiar to all of us. To a great extent, it has replaced calcium chloride because of the less fre-

quent occurrence of nausea and vomiting which often proves so troublesome with the use of the latter drug, as pointed out by Keith, Barrier, and Whelan(1,2) and also by Gamble, Blackfan, and Hamilton(3), who have used the sulphate as well as the chloride of ammonium.

Novasurol, possibly, is less familiar; it is a double salt of sodium mercurichlorophenyl oxyacetate with diethylbarbituric acid (barbital), containing 33.9 per cent of mercury. Originally introduced by Zieler(4) as a remedy for syphilis, attention to its diuretic action was drawn first by Saxl and Heilig(5) in the clinic of Wenckebach, striking results having been obtained in cases of

*Chairman's Address read before the Wilson Hospital Staff, October 12, 1926.

cardiac dropsy. Since that time, numerous reports have appeared advocating its use as a diuretic; and, more recently, American investigators, particularly Keith and his co-workers(1,7), and also Marvin(9), have reported excellent results with the combined use of this drug and ammonium chloride, especially in those cases in which the use of the single drug had met with failure.

Action of Novasurol

The exact method of production of the marked diuresis has not been known. It is believed, generally, that the effect is constitutional rather than local. De Mello Campos(10) states that the drug seems to unlock the tissues in dropsy, thus allowing the passage of the excess of water into the blood and that the preliminary hydremia precedes the diuresis and explains it. Hoover(11) does not think the action is due to any effect upon the mass movement of blood nor locally upon the kidney; so by a process of exclusion, he believes, as De Mello Campos, that the action is due to the liberating of water which is bound to the body cells in a manner analogous to the retention of water in myxedema.

Saxl and Heilig(5), Nonnenbruch(12), Mühl-ling(13), and Bohn(14) have demonstrated a relative and absolute increase in the excretion of chlorides in the urine; and, in our country, this has been confirmed by Marvin(9) and by Keith and Whelan(1,7,8), who also found a relative and absolute increase in the output of sodium. Keith(2) also states that when the chlorides in the blood are low, mercury compounds fail to produce diuresis. Associated with this marked increase in the total output of fixed base is a slight increase in the total output of urea, ammonia, and total nitrogen, as shown by various observers(7,15). The greater and more constant diuresis obtained when ammonium chloride is combined with novasurol, and particularly when the former drug is given several days before, appears to be due to the increased chlorin in the tissues rather than to the decrease in the alkali reserve(7).

Method of Administration

Ammonium chloride is administered by mouth, in divided doses, from 5 to 15 gm. daily, varying with the type of disease present and the response of the patient, and is given in the crystalline form in capsules of 0.75 gm. or 1.50 gm. Should an excessive depletion of alkali reserve occur, the dosage should be decreased accordingly. Novasurol is given in doses up to 2 c.c. intramuscularly or intravenously, at intervals of 3 to 7 days, again depending upon the type of the disease and the response of the patient. In all cases, a preliminary intramuscular injection of 0.5 c.c. or 0.75

c.c. should be given to determine the tolerance of the patient to this drug, which, as you remember, has a content of almost 34 per cent of mercury.

Diuresis, according to Marvin(9), usually begins within 2 to 3 hours after the injection, reaches its maximum in from 8 to 10 hours, then steadily declines, usually ceasing within 24 hours, but occasionally extending into the second day.

ILLUSTRATIVE CASE

(Only the essential points are cited)

History. Mrs. L. R., age 43, was first seen on June 12, 1926. Her complaint was of marked swelling of both upper and lower extremities, of 3 months' duration, and noticeable particularly at the end of the day. For a year she had suffered from shortness of breath upon exertion, the severity of which had been increasing gradually. Occasionally, there was an associated pain of a sharp, stabbing nature over the precordium and radiating to the back, usually of short duration and relieved by cessation of exertion. Occasionally, also, there was a "smothering sensation" present at night, which interfered with the patient's sleep. Headaches occurred seldom; but irregularly occurring attacks of dizziness were more frequent. Nocturia had been present for the last month.

The family history was negative and the past history of the patient essentially negative with the exception of a chronic articular rheumatic infection of several years' duration; no attack had occurred for the last six months.

Examination. The patient was a well developed, well nourished woman of middle age, not acutely ill, but suffering from shortness of breath and presenting a picture of marked generalized edema. Wt., 190 lbs. Ht., 5 ft. 5 in. T, 98.4; P, 128; R, 48. B. P., 224/180; P.P., 44. The lungs were negative except for a few moist rales at the bases.

Because of the amount of fat combined with the presence of fluid in the chest wall, the borders of the heart could not be determined as accurately as one would desire; however, a generalized enlargement of the heart was demonstrable. The heart sounds were decreased in intensity, of rapid rate; and occasionally auricular extra-systoles occurred. The pulse was soft, easily compressible, and equal on both sides; no sclerosis of the vessels was evident.

Fluid was present throughout the superficial tissues of the body, but no free fluid was demonstrated in the abdomen. The extremities were markedly swollen, and pitted easily. The reflexes were normal.

The urine totaled about 600 c.c. daily; sp. gr., 1028; reaction, acid; no albumin, casts, or blood; a few epithelial cells present. Hemoglobin, 70 per cent; erythrocytes, 3,980,000; leucocytes, 3,000, with neutrophils, 54 per cent and lymphocytes, 42 per cent. The blood Wasserman was negative.

Diagnosis—Chronic rheumatic heart disease; chronic cardiac hypertrophy and dilatation with marked insufficiency; auricular extra-systole.

Treatment. The patient refused hospitalization. A low-salt diet was ordered and fluids restricted to 800 c.c. daily. Digitalization was effected by Eggleston's method and then a standard daily dose of 30 minims of the tincture was given. Diuretin (theobromin—sodium salicylate) was administered

in doses of 15 gr., t.i.d. The urine output for the next few days averaged about 1200 c.c. daily, then dropped gradually to 720 c.c. and then remained more or less stationary. B.P., 162/114; P.P., 38. Pulse, 100. Extra-systoles were absent, and the force of the heart beat was stronger.

When no further diuresis could be obtained after three weeks' treatment, ammonium chloride was given in doses of 3 gm., t.i.d., and two days later, an injection of 0.5 c.c. novasurol intramuscularly. Within the next 24 hours, 2200 c.c. of urine was passed; after an injection of 1 c.c. three days later, 3086 c.c. were obtained within the 24 hour period. Because of the prompt response, no larger dose than 1 c.c. was administered in the subsequent injections, which totalled eight in number.

On July 31, 1926, seven weeks from the onset of treatment and four weeks from the use of ammonium chloride and novasurol, the patient weighed 150 lbs., a loss of 40 lbs. P, 90; R, 24. B.P., 154/120. P.P., 34. There was a marked relief of respiratory distress and precordial pain as well as the edema, a result due to the routine treatment as well as the diuretics, of course.

The restriction of fluids and salts was continued in order to prevent the reappearance of fluids, but digitalis was discontinued on July 31, in order to determine the present ability of the heart to carry its load and to this date (October 12), reappearance of the fluid has not occurred. Of course, it is impossible to predict how long this will be true

INDICATIONS FOR USE

1. *Cardiac.* In no series of cases has such striking results been obtained as in those with edema due to congestive heart failure, particularly where the underlying pathology is that of an arteriosclerotic affection, as shown by Marvin(9). Less noticeable results occurred in rheumatic and syphilitic disease, although more extensive investigation may demonstrate an equal result from these types.

2. *Renal.* At first, most writers emphatically warned against the use of these drugs in patients with evident renal disease, Saxl sounding this warning again very recently(16). However, Keith and his assistants(1) have demonstrated the efficacy of these drugs in cases of chronic nephritis with edema, selected because of the inability of the patients to excrete salts and water, and found that with the combined effect of controlled diets, ammonium chloride, and novasurol, in most cases immediate results were very satisfactory.

3. *Hepatic.* Many foreign workers (17,18) reported failure in cases of cirrhosis of the liver; on the other hand, Bleyer(19) and Fodor(20) obtained excellent results. In America, Rowntree and his co-workers(7,21) have published their striking results in cases of atrophic portal cirrhosis, syphilitic cirrhosis, and chronic polyserositis (Pick's Disease).

4. *Splenic.* Rowntree(7) has obtained marvelous results in two cases of splenic anemia (Banti's

disease) in both of which the ascites was extreme and in which there had been many previous tapplings.

5. *Combined.* The same authors have been able to relieve the ascites in cases due to portal cirrhosis with myocardial and renal involvement, so that the combination of these diseases should act as no deterrent to the employment of these drugs.

CONTRA-INDICATIONS TO USE

1. *Acute renal disease.* Since no one has proved that novasurol can be used safely in the presence of acute renal infection, it is advisable to consider it, as other mercury compounds, contra-indicated, a point which needs no further comment.

2. *Idiosyncrasy to mercury.* Because of the high content of mercury, one should guard against injecting the average dose of 1 or 2 c.c. until a preliminary injection has been given, as emphasized above. Marvin(9) reported toxic effects in eight of his twenty-six patients: stomatitis and salivation in four, bloody diarrhea in two, sterile abscesses in two (after intramuscular injection), and collapse in one. Other writers have not found toxic effects so frequent, judging from their observations; nevertheless, the potential danger must be recognized, always.

3. *Effective diuresis from routine measures.* Where adequate diuresis can be obtained by controlled diet, digitalis, and the usual diuretics, as theophylline and theobromine, novasurol is not indicated.

SUMMARY

1. A case of edema due to chronic myocardial insufficiency, in which only moderate relief was obtained from routine measures, including a low-fluid, low-salt diet, digitalis, and diuretin, gained marked relief from the oral administration of ammonium chloride and the intramuscular injection of novasurol.

2. Numerous observers have shown the excellent results of the use of these drugs, particularly in cases of edema due to myocardial insufficiency, and also in those due to nephritis, the various hepatic cirrhoses, and splenic anemia.

3. Care must be taken to avoid mercurial poisoning by a preliminary intramuscular injection of 0.50 c.c. or 0.75 c.c. of novasurol.

4. The combined use of controlled diet, ammonium chloride, and novasurol proved effective where, singly, each was ineffective.

CONCLUSION

In this method of treatment of edema, we have one that merits application and further extensive investigation in order that our knowledge of its efficacy may be enhanced.

(See References on page 72)

Some of the other features to which we call particular attention are the following:

1. The Chevalier Jackson bronchoscopic clinic, conducted in the largest amphitheatre of Jefferson Medical College, which was well filled with N.M.A. delegates, and on which occasion Dr. Jackson personally gave a lecture on bronchoscopy and then demonstrated his technic in eight cases.

2. The anatomical and pathological exhibit, part of which was subsequently removed to the Sesqui-centennial Exposition, where it won for the N.M.A. a silver medal in competition with exhibits from Philadelphia medical schools.

3. The surgical clinics at the Douglass and Mercy Hospitals, where the technic of local and bloodless tonsillectomy was demonstrated.

4. The Post-operative clinics at the Logan School, where many patients were shown who had had successful operations for mastoiditis, sinus disease, tracheotomies, etc.

5. The Phipps Institute and Jefferson chest clinics; the nervous clinic at Blockley; the suggestions of the dean of the University of Pennsylvania Medical School to the N.M.A., and the health meeting.

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We are in receipt of correspondence between our Business Manager and one of our oldest, and most substantial advertisers, the purport of which is to the effect that the advertiser is in the attitude of discontinuing his advertisement in the JOURNAL for the time being by reason of insufficient returns on the financial outlay. We have every reason to believe that this particular firm is receiving considerable patronage from our readers, but the mistake is made in not giving credit to the JOURNAL when ordering.

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ronize those firms which advertise with us as far as their products and prices will permit, and when so doing always to mention the fact that you saw the advertiser's announcement in the JOURNAL of the National Medical Association.

AMMONIUM CHLORIDE AND NOVASUROL

(Continued from page 67)

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N. M. A. Activities

THIRTY-SECOND ANNUAL MEETING

of the

National Medical Association

DETROIT, MICHIGAN

AUGUST 15 to 19, 1927

NOTE.—All Sections, Committees and Affiliated Associations are arranging what promises to be the most practical, logical, interesting and helpful program in the history of the National Medical Association. The National Committee on Program is giving careful consideration to the relative importance and proportion, selection and direction of every number and feature of the literary, clinical and technical requirements of the convention.

There will be many social features to provide entertainment and diversion for delegates and visitors, but the dominant note of the Detroit meeting is **Professional Progress**. Meetings, clinics, and other essentials of a successful convention of learned, scientific men and women will receive prompt and proper recognition and attendance. Good times will be ample, but it is planned that they shall not be overdone. There has been criticism of previous conventions, alleging too much diversion through social activity and not enough concentration upon the real purpose of the Convention—professional and scientific progress.

The following data constitute tentative programs only, and are subject to revision. Final make-up of program will appear in the July-September pre-Convention number, which will be released early in July to give ample notice of content.

See statement of Chairman of Local Committee of Detroit for general facts and features of the program.

CLINIC DAY

All of Wednesday will be devoted to special and general clinics and demonstrations for all Sections.

PUBLIC HEALTH MEETING

The Public Health Meeting this year will be a fifty-fifty proposition, one-half spoken, the other half visual instruction and pantomime or dramatized demonstration of health values.

The dominant theme will be **health hazards and specific remedies**.

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