THE

BULLETIN

OF

The Vancouver Medical Association

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VOL. XXVII | AUGUST, 1951 | NUMBER 11

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VANCOUVER MEDICAL ASSOCIATION
PROGRAMME FOR THE FIFTY-THIRD ANNUAL SESSION

Founded 1898; Incorporated 1906.

REGULAR MONTHLY MEDICAL MEETINGS

FIRST TUESDAY—GENERAL MEETING—Vancouver Medical Association—T. B. Auditorium.

Clinical Meetings, which members of the Vancouver Medical Association are invited to attend, will be held each month as follows:

SECOND TUESDAY—SHAUGHNESSY HOSPITAL STAFF MEETING.

THIRD TUESDAY—ST. PAUL'S HOSPITAL STAFF MEETING.

FOURTH TUESDAY—VANCOUVER GENERAL HOSPITAL STAFF MEETING.

FIFTH TUESDAY—(when one occurs)—CHILDREN'S HOSPITAL STAFF MEETING.

Notice and programme of all meetings will be circularized by the Executive Office of the Vancouver Medical Association.

VANCOUVER GENERAL HOSPITAL

Regular Weekly Fixtures in the Lecture Hall

Monday, 12:15 p.m.—Surgical Clinic.

Tuesday—9:00 a.m.—Obstetrics and Gynaecology Conference.

Wednesday, 9:00 a.m.—Clinicopathological Conference.

Thursday, 9:00 a.m.—Medical Clinic.
12:00 noon—Clinicopathological Conference on Newborns.

Friday, 9:00 a.m.—Paediatric Clinic.

Saturday, 9:00 a.m.—Neurosurgery Clinic.
edition, 1950.

ST. PAUL'S HOSPITAL

Regular Weekly Fixtures

TUESDAY—9-10 a.m. ..... PAEDIATRIC CONFERENCE

2ND TUESDAY of each month—11 a.m. ..... TUMOR CLINIC

WEDNESDAY—9-11 a.m. ..... MEDICAL CLINIC

2ND and 4TH WEDNESDAY—11-12 a.m. ..... OBSTETRICS AND GYNAECOLOGY

THURSDAY—11-12 a.m. ..... PATHOLOGICAL CONFERENCE (Specimens and Discussion)

FRIDAY—8 a.m. ..... CLINICO-PATHOLOGICAL CONFERENCE (Alternating with Surgery)

ALTERNATE FRIDAYS—8 a.m. ..... SURGICAL CONFERENCE

FRIDAY—9 a.m. ..... DR. APPLEBY'S SURGERY CLINIC

FRIDAY—11 a.m. ..... INTERESTING FILMS SHOWN IN X-RAY DEPARTMENT

SHAUGHNESSY HOSPITAL

Regular Weekly Fixtures

Tuesday, 8:30 a.m.—Dermatology.
Wednesday, 10:45 a.m.—General Medicine.
Wednesday, 12:30 p.m.—Pathology.
Thursday, 10:30 a.m.—Psychiatry.
Friday, 8:30 a.m.—Chest Conference.
Friday, 1:15 p.m.—Surgery.

BRITISH COLUMBIA CANCER INSTITUTE

Tuesday, 9:00 a.m. to 10:00 a.m. (weekly)—Clinical Meeting.

THE BULLETIN

Publishing and Business Office — 17 - 675 Davie Street, Vancouver, B.C.
Editorial Office — 203 Medical-Dental Building, Vancouver, B.C.
The Bulletin of the Vancouver Medical Association is published on the first of each month.

Closing Date for articles is the 10th of the month preceding date of issue.

Manuscripts must be typewritten, double spaced and the original copy.

Reprints must be ordered within 15 days after the appearance of the article in question, direct from the Publisher. Quotations on request.

Advertisements

Closing Date for advertisements is the 10th of the month preceding date of issue.
Advertising Rates on Request.

B.C. DIVISION, CANADIAN MEDICAL ASSOCIATION ANNUAL MEETING

OCT. 2-3-4-5th, 1951
VANCOUVER HOTEL

A. Scientific papers by:

Dr. H. C. Church—Pres. Canadian Medical Association.
Dr. H. S. Polley—Mayo Clinic.
Dr. Taylor Statten—Montreal.
Dr. G. R. Brow—Montreal.
Dr. E. C. Janes—Hamilton.
Dr. J. Baker—Seattle.

B. Entertainment

Annual Luncheon, Wednesday, Oct. 3.
Gala Buffet Dinner Dance, Thursday, Oct. 4.
H.M.C.S. Discovery Bar. Dal Richards and Hotel Vancouver Orchestra.
Annual Dinner, Friday, Oct. 5.
Hotel Vancouver. Cocktails. Music.
Speaker: Prof. Wm. Boyd.
Golf. Sherry-Coffee Party for Ladies.
Harbor Cruises, North Star Flights over City.

All Details in Next Issue.

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STATISTICS — JULY, 1951

Total population — estimated	397,140
Chinese population — estimated	6,282
Other — estimated	640

	June, 1951	
	Number	Rate per 1000 pop.
Total deaths (by occurrence)	333	10.1
Chinese deaths	20	38.2
Deaths, residents only	297	8.9

Birth Registrations — Residents and Non-residents:
(includes late registrations)

	June, 1951	
Male	451	
Female	425	
	876	26.5

Infant Mortality — resident only:

	June, 1951
Deaths under 1 year of age	14
Death rate per 1000 live births	21.9
Stillbirths (not included in above item)	8

CASES OF COMMUNICABLE DISEASES REPORTED IN THE CITY

	June, 1951		June, 1950	
	Cases	Deaths	Cases	Deaths
Scarlet Fever	66	—	2	—
Diphtheria	—	—	—	—
Diphtheria Carriers	—	—	—	—
Chicken Pox	95	—	112	—
Measles	169	—	243	—
Rubella	54	—	678	—
Mumps	38	—	196	—
Whooping Cough	16	—	38	—
Typhoid Fever	—	—	—	—
Typhoid Fever Carriers	—	—	—	—
Undulant Fever	—	—	—	—
Poliomyelitis	—	—	1	—
Tuberculosis	37	11	46	5
Erysipelas	2	—	—	—
Meningitis	—	—	—	—
Infectious Jaundice	—	—	—	—
Salmonellosis	17	—	2	—
Salmonellosis Carriers	—	—	—	—
Dysentery	—	—	—	—
Dysentery Carriers	—	—	—	—
Tetanus	—	—	—	—
Syphilis	8	2	18	—
Gonorrhoea	161	—	141	—
Cencer (Reportable) Resident	99	45	112	71

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The Editor's Page

One of the most interesting and significant items of news that appeared lately in the press, was the announcement that the medical profession of Great Britain had apparently won its point with the government in the matter of better terms of payment for work done and general conditions of practice. This, as far as we can remember, is the first time that the British Medical Profession has been able to win a major victory, in its long struggle under the Health Insurance plans of Great Britain. We congratulate our British colleagues most sincerely and trust that their lot, which has by no means been an easy one, and has been made more difficult by various inequities of administration, will continue to be ameliorated.

For some forty-two years now, there has been government control in Great Britain of medical practice, and the record is not one of which we feel that our profession can be proud. Steadily, the conditions of medical practice in that country seem to have "worsened", as Winston Churchill might say, and since the new Health Insurance Act passed some years ago, they have become very bad. It was, we are sure, a very difficult thing for the medical profession so to organize their resistance, under conditions of a vested interest, and against all the power of a government bent on socialization of all national activities, that they could hope for success of any kind. The fact that they were able to do so, shows how strong their sense of injustice and abuse must have been.

Nor are we, in this country, in any position to feel complacent about this matter. We read in "*Maclean's Magazine*" an article by Blair Fraser, a well-known writer with an ear close to the ground in all matters political. In this article he states that the government is making a fresh attack on the subject of Health Insurance, and implies, we seem to understand from what he says, that it won't be long now. His remarks on Hospital Insurance are naive in the extreme—and it is hard to believe that Mr. Fraser ever reads any newspapers published west of Toronto, or perhaps the Great Lakes.

In any case, we are not out of the woods by any means. Truly it is hard to believe that any province (for the decision must be provincial) would want to burn its fingers over Health Insurance, when the first stage, hospital insurance, has proved to be such a dangerous customer to tackle. True, too, we see Australia fighting free of the present system of Health Insurance, and its leaders seeking to return to a system more nearly resembling free enterprise—but we have many men in positions of influence and power, who firmly believe that a system of health insurance, where doctors will be well and strictly disciplined and controlled, is necessary and even imperative.

As a profession, we must, as we are constantly being told, maintain our solidarity, and maintain our principles. How we are to do this is the big question.

From time to time suggestions crop up that we should unionize—form a guild. We hope this will never be the case. We are not, and never can be, the sort of profession that can unionize. For the great union weapon is the strike—and that, with us, as with soldiers and sailors, can never be a weapon, nor is it necessary. Our experience in British Columbia, this new development in Great Britain, the Australian situation, all show that we can, if we stick together firmly and speak reasonably and fairly, win our case. We, and we better than any government, know what constitutes good medical care, and we know the evils of penny in the slot medicine. It is up to us to tell the public our news, to tell them the truth, to show them the dangers of poor medical work, and the folly of thinking that they can get good medical care at bargain prices, or at no cost at all. We should, as we can, show them the real costs of medical care, and how much more costly it is to have a poor variety.

That is one of the things to which our new Academy of Medicine can help us, and where it can be a centre of public education and public enlightenment. Here we shall have in one central place, all our activities, open to view, open to access by anybody. From this centre should stem improved public relations, more open discussion, more opportunity for both sides to come to know and understand each other's case, and to appreciate each other's honesty and sincerity.

CANADIAN MEDICAL ASSOCIATION, B.C. DIVISION

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Hours During the Summer Months:

Monday to Friday ..... 9:00 a.m. - 5:00 p.m.
Saturday ..... 9:00 a.m. - 1:00 p.m.

Recent Accessions:

Breed, R. S.; Murray, E. G. D. and Hitchens, A. P.—Bergey's Manual of Determinative Bacteriology, 6th edition, 1948.

Hamilton, A. and Hardy, H. L., Industrial Toxicology, 2nd edition, 1949.

Hewitt, R. M. (editor-in-chief)—Collected Papers of the Mayo Clinic and the Mayo Foundation, vol. 42, 1950.

Greenberg, L. A.—Antipyrine—A Critical Bibliographic Review, 1950 (gift).

Medical Clinics of North America—Symposium on Diseases of the Kidney, July, 1951.

Medical Research Council Memorandum No. 11—The Control of Cross Infection in Hospitals, revised edition, 1951.

Recent Supplements to the Acta Medica Scandinavica:

No. 248—The Arteriovenous Angiomatosis of the Lung with Hypozaemia by A. Giampalmo.

No. 249—Studies on the Nicotinic and Pantothenic Acid Content in the Blood, Urine and Feces of Man and on the Appearance of these Vitamins in Intestinal Diseases, by J. Jouni.

No. 250—Clinical and Prognostic Aspects of Acute Coronary Occlusion by S. Eckerstrom.

No. 251—The Effect of Digitalis, Strophanthin, and Novurit on Blood Coagulation, by S. A. N. Pere.

No. 252—Red Cell Survival Studies in Normal and Leukaemic Subjects, by R. Berlin.

No. 253—On Treatment of Barbiturate Poisoning, by E. Nilsson.

No. 254—Studies in Experimental Tuberculosis, by B. Swedberg.

No. 255—The Electrocardiogram in Pulmonary Tuberculosis, by A. Bjorkman.

BOOK REVIEW

HUANG TI NEI CHING SU WEN: THE YELLOW EMPEROR'S CLASSIC OF INTERNAL MEDICINE. Chapters 1-34 translated from the Chinese, with an introductory study by Ilza Veith, M.A., Ph.D., Baltimore: The Williams and Wilkins Co., 1949, pp. 253, illus. $5.50.

Many authorities consider the *Nei Ching* as the most important of the earliest Chinese medical classics. It is an enormous work and Miss Veith has furnished us with a translation of the first thirty-four chapters. It is probably the oldest book on internal medicine extant. The time and factual existence of Huang Ti, the Yellow Emperor, are not definitely established, but he is supposed to owe his place among the heirarchy of Chinese deities to his authorship of this work. Probably little of the original work actually remains, but it is generally assumed that a great part of the text existed during the Han dynasty, and its present form—probably much of it a compilation with later additions—is owing to its most famous commentator, Wang Ping of the T'ang dynasty in 702. It takes the form of a dialogue between Huang Ti and his minister Ch'i Po. The introductory essay by the translator together with the three appendices, two of them by Wang Ping, occupy over a third of the present volume, and with the translation furnish a valuable source book. Apart from this it makes fascinating reading for anyone whose taste draw him to the study of medical history. It even may be said to give good entertainment value. — D. E. H. C.

ALLERGY AND ANAPHYLAXIS*

General Principles

C. H. A. WALTON, M.Sc., M.D., F.A.C.P.

Diseases, now known to be manifestations of allergy, or altered reactivity, have undoubtedly existed throughout human history, but their nature and their relation to each other has been understood only in the past forty years. The diseases themselves are old and have been known for centuries. The allergic concept is a little more than a generation old.

Asthma is referred to in the writings of Hippocrates but he did not distinguish it clearly from other forms of dyspnoea. In the fourth century Aretaeus, in the time of Galen, gave the first clear description of the asthmatic paroxysm but it was not until the late seventeenth century that Thomas Willis and Sir John Floyer clearly distinguished bronchial asthma as a clinical entity. Characteristically, bronchial asthma is a periodic form of difficult breathing, often with completely free intervals and with no clinical or pathological evidence of heart disease or of inflammatory or neoplastic disease of the lung. It is, in fact, periodic bronchial obstruction.

Asthma has been recognized clinically for centuries but its cause and its pathology were not understood. In this connection, it is interesting to note the story of one Jerome Cardan, a noted clinician of Padua, who was called to Edinburgh in 1575 to treat a bishop who was suffering severely from asthma. Cardan wrought a miraculous cure by advising the elimination of the bishop's feather bed. There is no doubt that this old clinician, who was inevitably a good observer, had noted before that there was a relation between feathers and asthma. In his extensive practice he had probably observed this relationship many times but he formed no theories or conclusions about it. He simply applied it empirically and obtained good results in some cases.

Laennec thought that the typical asthmatic paroxysm was a neurosis, using the word neurosis in the sense of a functional condition, and not in the sense of nervousness that is often implied today. Laennec's idea that it was a reversible functional disturbance of the bronchi was remarkably close to the truth but the implication that the disturbance is mediated by the nervous system was unfortunate and probably delayed progress. As long ago as 1819, Bostock, who was a contemporary of Bright, in England, described a clinical syndrome, suffered by himself and a few of his patients, which was characterized by severe nasal catarrh, sometimes cough and dyspnoea, and which occured exclusively in the summertime. This disease is now known popularly as hay fever. The cause was not recognized. The clinical description was accurate.

In 1873, in the Pasteur era, Blackley, of London, demonstrated beyond question that seasonal hay fever, as observed in himself and in others, was due to grass pollen, and he demonstrated that when grass pollen was rubbed into a scratch on his skin that an urticarial wheal resulted but that other pollens did not cause such a skin reaction. He also demonstrated that his symptoms occurred only when there was free grass pollen in the air. Later on, Wyman, in Massachusetts, showed that hay fever, occurring in the United States of America, in the Autumn, was due to ragweed pollen.

These brilliant and accurate clinical observations of Blackley and Wyman demonstrated that pollen was the cause of hay fever and seasonal asthma, but the theory received scant attention in the great bacteriological era of Pasteur. After all, why should grass pollen, which is present in the air in England every June, give Blackley and a few of his friends hay fever but not bother other people? Grass pollen appeared to be innocuous, so Blackley's work and that of others was widely ignored. A few physicians, usually victims of the disease itself, did accept the pollen thesis and elaborate it. Dunbar, in Germany and Scheppergel, in the United States, continued to demonstrate the relationship of pollen to seasonal catarrh.

Just after the middle of the last century Hyde Salter, in the United States, showed that asthma could be caused by animal epidermal dust. The relationship between his observations and those published about the same time on pollen was not recognized.

*First of a series of five addresses delivered at the Annual Summer School of the Vancouver Medical Society, May, 1951, Vancouver, B. C.

A number of observers in the older literature noted that such entities as urticaria and infantile eczema occurred commonly in families and often also in the same people who suffered from asthma and hay fever. These scattered observations attracted little notice and it was not widely appreciated in the medical world that there was any relationship between these apparently unrelated diseases, and no adequate explanation was offered as to their cause. The substances which apparently caused the disease, for example, ragweed pollen in Massachusetts, grass pollen in London, cat dander and so on, were seemingly innocuous. They could not cause disease. They were literally ignored, or thought to be coincidental. These diseases could not be transmitted to other people.

It has been suggested, with some reason, that the brilliant observations of Blackley, Wyman and others were lost sight of and excited little interest because of the great revolution in medicine brought about by the discovery of bacteria as the causes of disease. Be that as it may, it is interesting that the allergic concept came about as a by-product of the early work in bacteriology.

In 1894, von Behring produced antitoxin for diphtheria. This remarkable substance produced great benefits and lowered the mortality of diphtheria greatly. Yet in a number of unfortunate instances some very mysterious and frequently fatal reactions occured following the administration of antitoxin. It is now widely known history that the cause of these reactions was acquired sensitization of the patient to the horse serum containing antitoxin.

It was soon found that guinea pigs, which were used for the standardization of antitoxin could not be used a second time. In some way these animals had become "altered" between the first and second test. This led to the development of the theory of anaphylaxis. If a foreign material, such as horse serum, is injected into an animal nothing happens. If, after an interval of several days, a second injection of the same horse serum is made into the animal, very serious reactions occur, which are often lethal. Richet advanced the hypothesis that the first injection used up the animal's protecting antibodies so that when the second injection was made the animal had no immune bodies left and reacted violently. For this reason he coined the term "Anaphylaxis" meaning the removing of immunity. This theory is no longer tenable, for many reasons, but the term anaphylaxis remains and includes all the experimental phenomena observed in animal hypersensitivity.

Although the term is unsatisfactory, it has remained. But, in 1907 von Pirquet suggested that another term was preferable, and he coined the term "Allergy" which simply means *altered reactivity*. It described a condition without implying a cause. Thus the term allergy, as developed by von Pirquet means the same thing as the term anaphylaxis coined by Richet. However, allergy has come to mean, in common medical usage, a peculiar kind of spontaneous hypersensitiveness seen chiefly in man and sometimes in animals, and it has come to mean something somewhat different from the artificial sensitivity produced in animals and which was originally called anaphylaxis.

Anaphylaxis, then, was a phenomenon which was produced experimentally in animals. It occurred only after an animal had been passively sensitized and was specific. Horse serum was apparently innocuous to such animals as guinea pigs on first injection. A second injection ten days later caused anaphylactic shock. Something happened in that ten days to alter the animal's reactivity. It was soon shown that after the first injection, specific antibodies were formed which would precipitate with the specific excitant.

About this time it was also discovered in the laboratory that if small daily injections of the antigen were made after the first sensitizing injection that anaphylaxis would not occur. This phenomenon was known as anti-anaphylaxis.

In 1910, Auer and Lewis showed that guinea pigs dying of anaphylactic shock, died really of bronchiolar obstruction, that is from acute asthma. This observation suggested to Meltzer that possibly human asthma was a disease of hypersensitivity or anaphylaxis.

Thus an attractive theory came out of the experimental laboratory to explain the

clinical observations of Blackley, Wyman, Bostock and others on hay fever and asthma. The grass pollen which did not affect most people affected Blackley because he was sensitive to it. The dander of Salter's cat was ordinarily innocuous but his lung was sensitive or allergic to it.

While there were many similarities between human sensitivity and experimental anaphylaxis, certain differences were soon noted. Human sensitivity was spontaneous or constitutional; anaphylaxis was passively induced. Human sensitivity was inherited as a dominant Mendelian character but anaphylaxis was not inherited, although it could be passively passed to the foetus through the placenta. A major difficulty arose from the fact that the antibodies produced in experimental anaphylaxis were demonstrated by precipitation, but in man no such precipitable antibodies could be found. Before long, however, Prausnitz and Kustner showed that specific reacting bodies could be passively transferred to the skin of a non-sensitive person by injecting serum from a sensitive person. Thus antibodies were present in human allergy but were not precipitable by ordinary laboratory techniques.

A third term, "Atopy", should be referred to. Coca and Cooke coined the word atopy, which means "strange disease" and intended it to include spontaneously occuring hypersensitivity in man and in contrast to allergy, which was to include all sensitivity phenomena as originally suggested by von Pirquet. However, generally speaking today, the term allergy is used to denote only human hypersensitivity as seen clinically, and anaphylaxis to denote passively and experimentally induced animal sensitivity, and also passively induced hypersensitivity in man. This is a more limited used of the word than von Pirquet intended, but current usage seems to settle the matter. In effect, atopy and allergy are now used more or less synonymously, and, in fact, the only widespread use of the word atopy is that customarily used by dermatologists who speak of atopic dermatitis. Otherwise, the terms atopy and allergy may be used interchangeably. Today, allergy is the more common word.

In the year 1911, Noon and Freeman, in London, adopting the idea of anti-anaphylaxis, successfully treated a patient by desensitizing him with grass pollen. They did this by giving very small and frequent hypodermic doses of an aqueous extract of the pollen to which he was sensitive. The effect was good and this is the first use of what is now known as "desensitization" or perhaps, more correctly, as "hyposensitization". Noon died of tuberculosis shortly after this, but Freeman is still living and has recently written a book "Hay Fever—A Key to the Allergic Disorders", which is reviewed in the Canadian Medical Association Journal, May, 1951.

I have thought it useful to go into the history of the development of the theory of anaphylaxis and allergy, not only to illustrate the rather remarkable fact that the theories of etiology, pathology and treatment of previously misunderstood diseases arose from experimental laboratory work on animals, but also that the conception of hypersensitivity applies not only to sensitivity of the lung, namely asthma, but to many other diseases involving other organs of the body. It was now possible to understand why some clinicians had noted a relationship between urticaria, eczema, hay fever and asthma. It was also now possible to understand why environmental factors such as pollen, animal dust, food and so on, seemed to be casually related to diseases which did not appear to be related pathologically. It is particularly important to recognize that the diseases under consideration rarely came to autopsy. The severely reacting tissues returned to normal after the reaction subsided and usually there was no visible evidence remaining of the violent tissue reaction which had led to such severe symptoms.

Experimental animal work has given us the key to an understanding of a group of diseases previously not understood and not suspected of being related. It also has given continued and invaluable facilities for further study and research.

Our knowledge of the pathology of allergic diseases has come from more frequent autopsy studies on fatal cases, from biopsies and in particular from direct observation on the experimental animal. From these observations we know that some of the characteristic pathological responses in allergic diseases are:

1. Increased capillary permeability with resulting loss of fluid into the tissues.

2. Increased secretion from mucous glands and cells.
3. Eosinophilia in tissue, in the blood and secretions.
4. Smooth muscle spasm.

These are the fundamental functional pathological changes in the reacting tissue. No matter which tissue is reacting the response is similar, with one or another of these changes predominating. It will be readily understood that these reactions are functional and reversible. The great difficulty in the pathological study of human allergy has been the marked tendency of the affected tissues to return to normal after the allergic state subsides. Obviously, if the reactions are long continued secondary changes may occur. Smooth muscle spasm may lead to hypertrophy; mucous membranes may become polypoid, increased mucous secretion may be so marked and so viscid that obstruction to an organ like a small bronchus may occur. The reaction of hypersensitivity may be so severe that death ensues from bronchial obstruction as in the experimental guinea pig, or from asthma in man, or from shock and falling blood pressure in the dog. In man, death can and does occur in severe allergic reactions, usually from respiratory obstruction.

Time does not permit an elaborate discussion of the mechanism of an allergic or hypersensitive reaction. It must be emphasized that the hypersensitive or allergic reaction is highly specific. When a guinea pig is sensitized to horse serum it will react to a second or shocking dose of horse serum but not to some other foreign protein. Similarly in human allergy the individual reacts specifically to definite agents. The grass sensitive patient is not necessarily sensitive to cat dander. The serum of the grass sensitive patient transferred intradermally to the skin of a non-sensitive person will cause that skin to react specifically to grass pollen and no other antigen. It is thought when the particular antigen enters the body, by whatever route, that it reacts with antibody in the cells of the reacting tissue. The reaction of antigen and antibody produces chemical substances which produce their effect pharmacologically.

It has been observed for many years, as long ago as 1910, by Sir Henry Dale and Laidlaw, that when histamine is injected into an animal, the reactions are very similar to and in fact often indistinguishable from those produced by anaphylactic shock. It is now thought that one of the products of the allergic reaction is histamine or some substance very like it. In addition, it is recognized that other substances are also produced and that histamine is not the only, or even the most important product of the allergic reaction.

In the case of urticaria and hay fever, histamine appears to be the most prominent agent produced by the allergic reaction. In asthma other substances, probably related or similar to acetyl choline are produced. If we accept the thesis that diseases such as asthma in man are brought about by specific sensitivity, then we must be able to demonstrate the antigen. This is possible in many instances, but not always. The possible agents are innumerable and their recognition is therefore not easy. Earlier I mentioned that Blackley and other clinicians had noted that if they scratched their skin with grass pollen an urticarial wheal resulted. When unrelated pollens were scratched into their skin nothing happened. That is, the pollen causing summer catarrh would react specifically by scratch skin test.

Now Blackley's long-neglected observations were suddenly seized upon with great enthusiasm, and it was found that many substances which caused allergic reactions in man and in animals would give a specific urticarial reaction when scratched or injected into the skin. On the other hand, skin reactions were often disappointing. Without going into the long history of this aspect of the subject, I might say that specific skin reactions can be demonstrated in a large proportion of cases where the antigen enters the body through the respiratory tract, that is, by inhalation, but it is very unreliable in other instances. When pollen enters the nose or bronchi it undergoes, in effect, an aqueous extraction. The soluble antigen is absorbed into and through the mucosa, and if this is sensitive, causes hay fever or asthma. The absorbed antigen circulates in the blood and any *sensitive organ* it reaches will also react—as for example, the skin in atopic dermatitis. Pollen or other inhaled antigen is unchanged as it enters the body.

On the other hand, another important route of entry for allergens is the gastro-intestinal tract. In this instance, digestion materially alters the ingested substance so that the antigen is probably a break-down product of the substance originally swallowed. In infancy, such substances as egg and milk albumin have been shown to be absorbed practically unchanged and the whole protein molecule is widely circulated by the gastro-intestinal tract loses this property early in life. Perhaps this accounts for the common occurrence of eczema due to milk, egg and wheat in infants. Realizing that the ingestant antigen is probably a product of digestion, it is not surprising that testing the skin with undigested antigen is often useless and indeed very misleading.

The real test of specific sensitivity is, of course, the exhibition of the suspected antigen to the patient, preferably directly to his shock organ. For example, it is much better to prove that the patient's hay fever is due to pollen by placing pollen in his nose, than by indirect method of skin testing. Yet skin testing is a much nicer procedure from the patient's point of view and is, indeed, often of the greatest help. Skin tests then are useful for studying the possible agents for sensitivity but are not proof of clinical sensitivity. A positive skin test simply means that there are specific antibodies to that antigen in the dermal cells.

If you accept the thesis that a particular disease is due to allergy or specific sensitivity, you must be able to demonstrate that the specific antigen will produce the reaction, and conversely that when the antigen is not present, that no reaction will occur. In man, hypersensitivity is usually manifested by reactions in one organ, although an overwhelming dose may produce general reactions. The reactive tissue is referred to as the shock organ. This might be the skin, the nasal mucosa, the bronchi, the gastro-intestinal tract, etc. The symptoms obviously vary with the shock organ. Local tissue oedema may be evidenced by a hive in urticaria or by nasal obstruction in hay fever. Smooth muscle spasm may cause intestinal cramps or perhaps dysmenorrhoea. A very characteristic symptom of the allergic reaction is itching. In the nose this itching is manifested as sneezing, in the lung as coughing, in the bowel perhaps as diarrhoea or crampy pain.

The outstanding clinical characteristic of allergy is its periodicity. Asthma commonly occurs in paroxysms with completely free intervals and similarly with other allergic manifestations. The patient who suffers from severe asthmatic dyspnoea may be quite symptom free and without signs when he finally gets an appointment with his doctor. Urticaria may be severe and disfiguring today and entirely absent tomorrow. Obviously, the history of the circumstances surrounding all attacks is of the greatest importance in making an etiological diagnosis. Skin tests may assist, but in themselves are not the easy solution that they were once thought or hoped to be.

If one considers the possible routes of entry of an entigen into the body it will aid in the search. Inhalation and ingestion are obvious entry routes. Injection of therapeutic substance such as liver or insulin and direct contact with the substance by the skin are other obvious possible routes.

Blackley's grass pollen and Salter's cat dander conceivably could have been swallowed or otherwise gain entry to the body, but the most likely entry route was in the inspired air. Such bodies must, of course, be particles which are suspended in the air. They are air-borne.

Many types of air-borne particles, mostly innocuous, enter our respiratory tract. Some of them are highly antigenic to allergic people. Certain large groups of cases of hay fever, asthma and dermatitis are strictly seasonal in their incidence. This, of course, narrows the possible field of antigens. In the growing seasons one naturally thinks of the products of plant and fungus life such as pollen and spores which are air-borne. These obviously vary from place to place and have fairly constant characteristics in any one place. It is obvious that such agents, to cause harm, must enter the body in the inspired air, that is, they must be air-borne. Only air-borne pollen and spores can reach the patient conveniently and these can be determined by suitable botanical and air studies. Many pollens are insect-borne and do not travel as suspended particles in the air and are, therefore, of no importance, generally speaking, in allergy. In Manitoba,

in the last few days in April, we normally expect such trees as the poplar and the elm to pollinate. Each year these trees pollinate in the same manner. Some years greater quantities of pollen are produced than in others, and the dates vary slightly, but are amazingly constant. Obviously, then, if a patient is suffering from sensitivity to the pollen of one of these trees, he will manifest his symptoms in that particular season and in no other season, unless he has, of course, other sensitivities. In Vancouver, the poplar and the elm and other trees undoubtedly pollinate at a similar time and the same rule would apply. It will be seen, therefore, that the characteristics of the air-borne particles in any community are important if an accurate diagnosis is to be made. These vary from community to community, and the variations account for the fact that the patient who has symptoms in one area may be free in another, not because the climate is different, but because the agent to which they are sensitive is not present.

If a patient who is sensitive to poplar or elm pollen has symptoms when those trees are not pollinating, obviously there must be some other cause that should be searched for.

There are many other examples of air-borne allergy such as the epidermal dust from furred and feathered animals. In dealing with inhaled or suspected inhaled allergies, one must, of course, be highly suspicious of the dog, cat or horse or even the canary. Farmers and pet lovers are therefore common victims of animal sensitivity. Domestic dusts such as house dust, tobacco, insecticides, etc., and industrial dusts such as grain dust, seed dust, fur dust, are obvious factors. Other environmental dusts such as feathers, lint, etc., must be considered and are frequent causes of trouble.

Another great group of allergens is that which is swallowed, the ingestants. This group includes food, drink and drugs. Any food may cause trouble but those which are eaten earliest in life such as milk, egg, wheat, peas and peanuts, chocolate, etc., are among the most common offenders. When food sensitivity involves seldom eaten foods it is easily recognized. The person who develops hives from the ingestion of shellfish, commonly makes his own diagnosis. The patient who has hives from such a commonly eaten food as milk, may fail to recognize it. Skin tests are disappointing, for the reasons referred to before. In ingestant cases they are of little or no value. Test diets are necessary and often valuable.

Injected allergens have been referred to and include such obvious therapeutic agents as penicillin, liver, insulin and others.

At first it was generally believed that only protein could act as an antigen but we now know that certain polysaccharides and even simple chemical substances such as aspirin can act as allergens. It is thought that these simple substances combine in the blood serum with globulin to form haptens which are the specific allergens.

I have referred so far only to allergens or antigens which enter the body from without, that is extrinsic agents. It seems highly probable that allergens can also originate from within the body as products of metabolism, foci of infection, etc. These intrinsic agents are very difficult to demonstrate convincingly and are less well understood.

If one adopted the principles of allergy and could demonstrate the offending agents in every case the results would be most satisfactory. Indeed, in clinical practice we can, with careful study, do this in about two-thirds of our cases. The other third are otherwise indistinguishable, clinically, but our diagnostic resources fail to demonstrate the specific sensitivities involved. The question has been raised, does this group represent some mechanism other than allergy, or does it simply represent our diagnostic limitations? I think the latter is closer to the truth. We have a workable hypothesis which answers the problem in a majority of cases but needs further elaboration. A clinician dealing with allergic patients requires a detailed knowledge of the many invironmental factors surrounding the patient, the botanical and mycological factors, the dusts met in his work, the foods he eats, the drugs he takes and the drinks he drinks.

Although the allergic concept has given us an invaluable approach it is only part of the story. We know that many allergic people are peculiary unstable psychiatrically, some are affected by their endocrine systems, for example, during pregnancy, adolescence, etc. Why do some people fall into the very unsatisfactory category of intrinsic

allergy? Does the term *intrinsic allergy* mean that we are too polite to say we cannot find the cause?

Allergy is common in man and it is now recognized more frequently in animals. Many investigators have tried to estimate the frequency of allergy although this is practically impossible. However, there is reason to believe that 5-10% of our population have more or less severe allergic disabilities. Perhaps as much as 2% of the population suffers from asthma of varying degrees and, of course, it is often unrecognized or confused with some other disease. Such figures cannot be accepted uncritically, but they do serve to emphasize the fact that allergic phenomena are very common. These patients are too often neglected in spite of the fact that the phenomenon of hypersensitivity and its manifestations has been known for more than a generation.

At present, we must be able to recognize an allergic state and to treat its manifestations symptomatically. In many cases we can find the offending allergens and when we do so we should attempt to separate the patient from the offending agent. If that is impractical, perhaps we can desensitize him or otherwise protect him from his offenders.

There are many therapeutic measures available for the relief of symptoms due to allergic disease. Symptomatic management is valuable but knowledge of the cause of the disease offers much more fundamental and permanent help.

The phenomenon of hypersensitivity or allergy as we know it in man, has given us a highly acceptible theory of the cause of certain diseases. In a large number of properly studied cases specific causes of hypersensitivity can be demonstrated. In other cases of the same disease where we fail to make an etiological diagnosis we cannot be excused from the allergic concept because of our failure. There is no demonstrable pathological difference between the allergic person in whom the etiology is known and the allergic person in whom the etiology is not determined. It is useless to say that they are different cases. Until other mechanisms are discovered we must assume that all of these diseases are due to hypersensitivity and continue our effort to demonstrate a cause. Such terms as "non-allergic asthma" seem to me to be untenable. It is true, there are many cases in which we cannot show the allergic cause, but that simply reflects the limitations of our diagnostic ability. Symptomatic treatment will always be necessary and is highly useful, but etiological management is obviously desirable in all cases.

Division of Medicine,
Winnipeg Clinic,
St. Mary's & Vaughan,
Winnipeg, Man.

BRIEF SERIES OF LECTURES ON PSYCHIATRY IN GENERAL PRACTICE

W. DONALD ROSS, M.D. (Man.), F.R.C.P. (C)
Assistant Professor of Psychiatry, University of Cincinnati

—The Handling of Acute Psychiatric Problems in General Practice

This discussion is concerned with psychiatric emergencies in general practice, with those situations which must be handled by the general practitioner without time to consult a psychiatrist. I mentioned that it would be one of the discussions on treatment and you realize that the other discussion on treatment was entirely about psychotherapy, with nothing about other types of psychiatric treatment. The major psychiatric therapies, such as shock treatment, and the major types of psychotherapy such as hypnosis and psychoanalysis are, of course, therapies to be administered by the specialist in psychiatry and we are not concerned with them in this course. Other physical therapies in chronic psychiatric problems in general practice might be described, such as hormonal and drug therapies, but there is not time in a few lectures to consider them in detail. I think it will be more useful to you to cover a few common emergency situations,

*Presented to the Vancouver Medical Association, May 28th - June 1st, 1951.

such as suicidal tendencies, acute insomnia, nocturnal delirium and other organic confusions, acute alcoholic problems, acute grief, acute panic state and the apparent sudden onset of psychosis.

SUICIDAL TENDENCIES

There is a problem here for the physician to steer a middle course between the failure to recognize serious suicidal tendencies and get the patient to protective care, and the opposite attitude, of being so fearful of suicidal risks that he will not carry any responsibility for treating emotional disorders, or that he will, by his anxiety or anger at suicidal threats, actually provoke a patient into a suicidal gesture as a way of getting attention. I want to recommend as essential reading, Chapter VI "Suicide Risks", of Levine's book, "Psychotherapy in Medical Practice" (3). The signs of real suicidal risk are well described there, the deepness of depression, especially from the vegetative signs mentiond in th discussion of common emotional disorders, depressive delusions, past suicidal attempts, during the recovery from a deep depression, increased tension or agitation with depression, unreality feelings and absence of affection for loved ones, absence of manifestations of hysterical personality and concealment of suicidal ideas. The risk is greater in the early morning hours, or after return from a vacation. You are all aware of the post-vacation depressed feelings and the Monday morning blues. In really depressed persons these can reach suicidal proportions. The concealment of suicidal ideas leads us over to the other group of patients with vociferous suicidal threats. Although one cannot rely on it absolutely, the likelihood of a successful suicide attempt is less if the patient is threatening to the doctor that he or she will commit suicide. This happens most in hysterical dramatizing individuals, as a way of getting attention, and the doctor may precipitate the gesture by being too concerned about the threat and not enough concerned about the patient's basic need for psychotherapy. I recall a patient in psychotherapy who phoned her psychiatrist to say that she was going to commit suicide. The psychiatrist, knowing the patient well, was unperturbed and told her that she should come in at her regular appointment time to talk it over. She then phoned her general practitioner, who said he would be right over. When he got there he found that she had swallowed a dozen nembutal capsules after the phone call. I know of another instance where a minister was the one who rushed over and precipitated the act. These examples are in contrast with many instances where the patient came to the next psychotherapy hour with no suicidal attempt because he had not provoked excessive attention by his threats. Suicides will occur, of course, even under psychiatric care, and even in psychiatric hospitals, because psychiatrists are not omnipotent. But the risk is reduced by psychiatric supervision, and it would be fair to consider those suicides of people who have been seeing doctors, but who have not had psychiatric consultation, as failures in preventive medicine. I had an opportunity to review the documents of soldiers in the Canadian Army who committed suicide. The majority of them had been seen both by some non-psychiatric specialist, for physical complaints apparently on a depressive basis, and also by some non-medical officer for some personal troubles, but very few had seen a psychiatrist.

ACUTE INSOMNIA

Physicians all have their own ways of handling chronic insomnia, usually with sedatives, and with the recognition that insomnia is a symptom of an emotional disorder requiring investigation. Even in the acute insomnia with the anxiety accompanying hospitalization, the customary use of sedatives may be the most expedient method of handling the problem. But what about the patient who phones the doctor at night from home because of being unable to sleep on that night? If the doctor's own sleep has been disturbed by the call he may be particularly non-plussed as to how to handle the situation without a punitive attitude to the patient. Yet psychological handling of the patient may give sleep to the patient and keep the relationship with the doctor in a state such that he can be of further help to the patient in the future. An example: A pregnant woman who was in psychotherapy by a psychiatrist, had sprained her ankle and had had a cast applied by a surgeon. She had taken a sedative prescribed by her obstetrician, but being anxious and unable to sleep, phoned her psychiatrist at 1:00 a.m.

The psychiatrist, understanding the patient, suggested that her husband prepare her some warm milk to drink. With this "mothering" from her husband she slept like a baby and she did not disturb the psychiatrist at night on any future occasions. The doctor who responds with irritation at a patient's special request is more likely to find himself provoked frequently in the future by other attempts to get him angry. The consistently kind doctor is more likely to find his patients more loath to bother him. Other psycho-physiological advice on such occasions include the tepid bath or reading by a dim light instead of trying so hard to go to sleep in the dark.

NOCTURAL DELIRIUM AND ORGANIC CONFUSIONS

An exaggerated form of insomnia with organic, or toxic, cerebral disorders, such as arteriosclerotic mental changes, is nocturnal delirium, with confusion and disorientation added to the sleeplessness. Proper psychological handling of these persons will be *better* than sedation, since bromides or barbiturates further embarrass the inadequate cerebral metabolism. Such persons may have been rational in daylight or at home but were pushed over the threshold by anxiety in the dark or in the unfamiliar surroundings of hospital. They are better in a room with other patients than alone, if it is not possible to have a nurse with them constantly, and better with a light burning so that they can orient themselves. "Mothering" with warm milk by a nurse, or by whoever is available, is far better than adding the injury of a toxic drug to the insult of being deserted.

If a sedative seems necessary there are far better ones for aged people or people with brain disease than bromides or barbiturates, for example chloral hydrate, paraldehyde, or, if not contraindicated, alcohol. A sound pharmacological agent where cerebral circulation is poor is nicotinic acid, not the amide, which has the same value as a co-enzyme as far as impairment of cerebral oxygenation is concerned, but the acid, with its flushing effect, in about a 50-100 mgm. dose. This produces vaso-dilation in the brain as well as the unpleasant flushing in the skin. There is a useful drug on the market for sedation in senile and organic states, called somnol. This combines nicotinic acid with very small doses of apomorphine, scopolamine and two barbiturates. Its use is described in a paper by Lehmann in the Canadian Medical Association Journal in 1949 (1).

The vaso-dilator effect of nicotinic acid can also be used for the confusion of an acute organic cerebral condition, such as that following a head injury, when you are sure that all necessary neurosurgical steps have been taken. In such a case repeated doses of 50 mgms. six times a day may accelerate clearing up of the confusions (2). This is especially true if alcoholism preceded the head injury. Aminophylline is another valuable vasodilator and can be given by suppository.

These organic delirious patients need special constant supervision in view of the risk of wandering around and hurting themselves. They are always better placed on the ground floor of a hospital, in the event that any lapse of supervision allows them to walk out a window and they will then not have so far to fall.

ACUTE ALCOHOLIC PROBLEMS

These include pathological intoxication, delirium tremens and acute alcoholic hallucinosis. The uncooperative alcoholic patient is certainly a strain on the physician's equanimity, and a temptation to evade responsibility for the patient. If the physician's calm and friendly attitude will not soothe the savage beast, the enlistment of other strong arms may be the kindest thing for the patient. I shall never forget one case where the general medical officer tried to treat an acute alcoholic hallucinosis in a barrack room, until the patient jumped out a second story window to get away from imaginary men chasing him with water pistols. Even when the doctor shipped him into the psychiatry ward of the hospital, which this medical officer disdained, the doctor had not recognized the bilateral fractures of the calcanei which were sustained in the jump. In this case the psychiatrist, who discovered the fractures, also made a mistake. He gave intravenous pentothal in an attempt to quiet the patient, with exactly the opposite effect. Finally, intravenous morphine did the trick, since it was the pain of the fractures which was further exciting the patient.

I shall not differentiate between these various acute alcoholic conditions. In all of them what I have said about psychological handling rather than sedation in organic disorders is applicable. Nicotinic acid is particularly valuable, plus large doses of the rest of the vitamin B complex, in view of the usual nutritional factors in these disorders, with injection as the route of administration because of gastritis. This is a good place to mention the sedative value of insulin, for alcoholic and other excited states. The plan is to use a soporific dose of insulin short of a coma dose. Since alcoholics have livers depleted of glycogen, one must go cautiously, beginning with five units and ready to cover with intravenous glucose. One may step it up gradually and find that perhaps 40 or 50 units are needed to maintain somnolence. A combination of vitamins, insulin and glucose is the basis of the "Bellevue cocktail" for the treatment of D.T.'s. I don't think there is any particular magic in the exact formula for the Bellevue cocktail.

ACUTE GRIEF

The physician frequently encounters the problem of bereaved individuals in a family of a patient who has died. An article by Lindemann in the American Journal of Psychiatry in 1944 (4) is well worth reading on the symptomatology and management of acute grief. The giving of consolation and of reassurance that all possible was done for the deceased are important parts of the physician's job, and if he is to practise preventive psychiatry as a family physician he will continue to keep an eye on the bereaved members to see if grief is taking a pathological form requiring more help by him or by a pastor or social worker. One of the most difficult acute grief reactions to handle is that of blaming the doctor for the patient's death. The doctor should realize that this occurs as a defence against anxiety, by the relative, about his own feelings toward the deceased. The doctor should not interpret this, nor become unduly defensive himself, but rather take the attitude: "I understand you are upset just now, but I really have done all I could for the patient." With understanding handling this reaction will blow over rather than become the focus of litigation. Sedation, of course, is of great value in the acute phase of a grief reaction. Sodium amytal is particularly useful for this.

ACUTE PANIC STATE

We differentiated this from acute anxiety and from psychosis in our discussion of common emotional problems. This occurs with acute internal problems or an acute external disaster which is overwhelming. If war should bring threat to the civilian population we may have this condition to deal with in large numbers. A firm reassuring attitude by the doctor is important, with warm drinks and clothing, if hunger and exposure play a part. Here heavy sedation is one of the best first aid measures, e.g. sodium amytal in III or VI grain doses.

SUDDEN ONSET OF PSYCHOSIS

What appears to be a sudden onset of psychosis may be an acute panic state due to internal conflicts. Chronic hospitalization may not be necessary if the individual can be protected properly and treated, at first with sedation and later with understanding interviews. More often, the apparent sudden onset of psychosis is the sudden recognition by the family that the patient is psychotic. They may have temporized for some time and finally admitted that the patient is not "himself". Such is the time to get the patient to psychiatric care, before the members of the family change their minds. If commitment to a mental hospital or referral to a psychiatrist are indicated this should be done without subterfuge. Any attempt at deception of the patient, such as taking him for a ride in the country, or tell him he is going into a hospital for a physical check-up, may seem the line of least resistance for the doctor at the time but it will make things more difficult for the patient's psychiatric treatment and for his future confidence in the doctor on recovery. Referring to a psychiatrist as "another doctor whom you wish to see the patient in consultation" may be justified and the psychiatrist can explain what type of doctor he is, after the patient finds that he is not an ogre. Usually the patient has some awareness of mental illness and appreciates a complete absence of deception. If the patient will not respond to reasonable advice from the doctor, and if he is a danger to himself or to others it is best to engage

the physical force of accomplices, telling the patient at the same time that this enforced hospitalization is in the best interests of the patient. It is important that the doctor does not have a punitive attitude to such a patient, so that he can be guilt-free and confident that he is using such force in the patient's own interests.

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BRIEF SERIES OF LECTURES ON PSYCHIATRY IN GENERAL PRACTICE*

W. DONALD ROSS, M.D. (Man.), F.R.C.P. (C)

Assistant Professor of Psychiatry, University of Cincinnati

PSYCHOTHERAPY BY THE GENERAL PRACTITIONER

In this lecture we are concerned with something which you are doing already for your patients although you may not glorify it, or stigmatize it, whichever you prefer, with the term psychotherapy. The aim of the lecture is not so much to give you a new technique as to help you understand what goes on in any case between you and your patients, and perhaps to take a little more trouble to assure that you are doing it in a manner that is beneficial to your patients.

THE ECONOMIES OF PSYCHOTHERAPY BY THE GENERAL PRACTITIONER

When I say, "take a little more trouble," I am sure that there are some of you who are protesting within yourselves, "But I don't have time to do psychotherapy on my patients; they want to talk to me when I am rushed, with all sorts of emergencies to meet, and I just can't do it." The psycho-therapeutic approach to medical practice need not take much more time; it can save time by saving efforts which would be wasted with those patients who require repeated examinations, or develop unnecessary illnesses, if they do not have someone who understands them and in whom they have confidence. Apart from the economic waste in unnecessary laboratory examinations, which involve expense which could be better directed to compensating the physician for his time spent with them, there is the economic waste and actual risk to health among sick people shopping around to irregular practitioners because doctors have not taken the trouble to understand them and give them emotional support, while keeping the trained medical eye on them and preventing the oversight of serious physical disease which can occur if they put their trust in a quack.

THE EMOTIONAL MEANING OF THE DOCTOR FOR THE PATIENT

Basic to having a psychotherapeutic approach in one's practice is an understanding of what the doctor means in the patient's emotional economy even if the patient is not consciously aware of this meaning. Anyone who is sick or suffering regresses to some extent, perhaps only unconsciously, to the emotional needs of childhood, to have someone like a parent on whom they can be dependent and by whom they will be protected. The act of going to a doctor is an act of seeking out someone who will, like a father, or a mother, look after them either continuously, or long enough, until, with the restoration of health, they are able to function as an independent adult without the special dependency on the doctor. It is not neccessary, or even advisable, for the doctor to make the patient aware of this. It is necessary, however, for the doctor to keep it in mind if he is not going to disappoint the patient and be a rejecting or punitive parent. It is also necessary for him to have this in mind in order to tolerate the difficulties of what I have described as the layer of defence against anxieties in the

*Presented to the Vancouver Medical Association, May 28th - June 1st, 1951.

patient. For this defensive layer may include rebelliousness against the doctor, complaining demandingness, or sexual feelings for the doctor. He can handle these with equanimity only if he realizes that they need not be taken personally by him, that they involve displacements of feelings that the patient has had for someone else on whom he or she was dependent in the past. He can then be free to recognize the anxieties in the patient and give the appropriate help by medical examination, by physical treatment, by advice, or just by listening.

THE VALUE OF LISTENING

Many doctors fail to realize the full emotional value to patients of having someone important who will listen to them. The doctor may be accustomed to doing something whenever anything is wrong and may feel that just listening is not doing anything. This is not so. When a person is talking out, with the one exception of compulsive talkers who use talking as a defence, he is reorienting his feelings and becoming more able to solve problems for himself.

This has been amply demonstrated by interviews of industrial workers. There was a project carried out at the Western Electric Company in which employees were interviewed over a course of time while various changes were made in their working conditions in order to find out the optimum conditions for productivity and happiness. Both productivity and morale of the workers improved continuously. Even when apparently improved working conditions were changed back to the preexisting conditions the workers continued to improve. It was finally concluded that the interviews in which the workers had the opportunity to ventilate their feelings about their work was the factor responsible for the improvement (3). This kind of experience has given rise to the practice of employing counselors in industry who just listen to "gripes" and encourage the employees to talk out, without giving advice or without doing anything about it. This has a tremendous mental hygiene value in industry.

The effect of just listening can be illustrated by a story which is told about Dr. Helene Deutsch, a woman psychiatrist now in Boston, on the occasion of her arrival in the United States from Vienna. She was staying at a New York hotel and a room clerk, having heard that she was a famous psychiatrist, asked if he could talk with her about some marital difficulties. He spoke to her steadily for about three-quarters of an hour, thanked her profusely, and let her go on her way. A few years later she was visiting New York again and the same room clerk spoke to her and told her that after that consultation with her he had been able to clear up his troubles completely. The punch line of the story is this: that, at the time of the first visit to New York, she spoke very little English and had hardly understood a word he had said!

THE DOCTOR DOES MORE THAN LISTEN

However, I don't want to give you the impression that that is all that psychiatrists do! The psychiatrist has the knowledge with which he can direct the stream of talk by the patient in a therapeutic way, and with which he can recognize when something other than listening is indicated. Likewise the general physician, with his diagnostic knowledge, is able to recognize when something more than listening is indicated. "Non-directive counselors" in industry, as they are called, have been known to go on listening to an employee while his general paresis progressed further, or while he talked himself further into a paranoid psychosis. Hence listening by a doctor has safeguards not present in listening by a non-medical person, even though doctors can take a leaf from the book of the non-directive counselors. "Their book," incidentally, is one by Carl Rogers, entitled "Counselling and Psycho-therapy" (2) and it should be read if one has difficulty in understanding how to listen without giving advice.

The things more than listening which the doctor does are well described in Levine's book which I have recommended to you (1). The chapter on methods for the general practitioner is essential reading for getting the most from our discussion today, and the subsequent chapters on advanced methods and methods for the specialist will be interesting to you also. Psychotherapy begins with history taking and physical examination, especially if interviewing is carried out as suggested in the first lecture, for, during this phase, the relationship is built up between patient and doctor. It should also be realized that all the physical methods of treatment, including medications and even

palliative sedatives, have a psychological, as well as a physiological value to the patient. Such medication means that the doctor-parent figure has given something to the patient which he can take at intervals, periodically satisfying the need to be given to. This is a better way of conceiving what goes on than the idea of "suggestion," as the psychological effect of a prescription over and above its pharmacological action. In fact, to rely on "suggestion" is not good psychotherapy. I would discourage the use of inert "placebos" because of the insincerity involved. If the doctor gives a drug with at least some beneficial pharmacological action on the patient, he feels confident that he is giving to the patient, and this is imparted to the patient in his manner of doing so that the patient feels the doctor's interest in him and responds to this.

What the doctor does more than listen, as far as his verbal contributions to the patient are concerned, includes *education, reassurance, and active advice.* Education may be necessary to dispel false ideas about health which are increasing the patient's anxiety, such as the fear of the adolescent boy that masturbation causes insanity, or the fear of the menopausal woman, or the woman after a hysterectomy, that her sex life is over. Reassurance can be given on the various anxieties of the patient which are out of proportion to their supposed causes. The calm unanxious attitude of the doctor is of greater importance than the particular words he uses to reassure. On active advice, one must be careful, and not make the mistake of assuming that a solution which works for oneself is the best one for the patient. This is one of the commonest errors in amateur psychotherapy. A smart handling of the seeking for advice is illustrated by the device used by a non-directive counsellor who was asked for help by an employee in deciding whether she should have premarital intercourse or not. The counsellor told her to make a list of the reasons for, and the reasons against, and to come back and talk it over. The client came back with a longer list against and said that she had decided for herself that she wouldn't. A ticklish situation had been handled adroitly. One must also be careful not to use the patient to talk out one's own experience. If you ever catch yourself saying to a patient: "That reminds me of when I . . ." stop, and think twice about it.

RELATIONSHIP TO MORE INTENSIVE PSYCHOTHERAPY

The psychotherapy which has been described includes both *supportive* and *expressive* aspects. Some amount of expression of feelings by the patient is necessary for the doctor to understand the patient and to give the proper support, but, by and large, psychotherapy by the general practitioner is best aimed at supporting the patient, through times of temporary life difficulties, or indefinitely. Cure is effected of neurotic symptoms which have been related to a particular life difficulty, but remoulding of a neurotic personality is not attempted. More specialized psychotherapy goes further in an expressive direction with interpretation of the sources of the difficulties in the patient's earlier experience and an effort to undo chronic neurotic patterns. You may feel that supporting a patient indefinitely is not in keeping with your urge to cure people, but it is as much a part of the doctor's job as is replacement therapy in pernicious anaemia or diabetes. As mentioned already, it is much more sound economically than having the patient shop around wastefully, if the neurosis is not one with a reasonable hope of cure by specialized psychotherapy, or if such is not available.

What about the time it takes to support patients emotionally? It takes about an hour on two different occasions to make the initial assessment. Subsequent visits may be very brief if only medication is given, or they may be 20 or 30 minutes in length, to give the patient some unhurried opportunity to report the current state of emotional problems. Long periods are not necessarily advisable since they may mean getting in beyond one's depth with the patient. This time should, of course, be charged for by the doctor at a rate equivalent to what he charges for the assessment examination, so that no impatience about losing income because of his generosity in time enters into the psysician's attitude to the patient. This is money well spent by the patient if the doctor is discriminating in his allotment of time, just as is money well spent on psychotherapy by a psychiatrist if the case is properly selected. There are widespread misconceptions about psychiatrist's fees. Although some psychiatrists over-charge, just as

some other doctors do, one must realize that if the psychiatrist listens to the patient for sessions of about 50 minutes, he cannot see as many patients in a day and he must charge accordingly. Likewise, the general practitioner can budget part of his time for more help to a few individuals, instead of spreading himself so thin that patients with emotional problems seek help outside of the medical profession, even when they have physical symptoms, or worse, physical as well as emotional disease.

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URETERAL CALCULI

By DR. JOHN BALFOUR

Given before the Vancouver Medical Association Summer School—1951

(a) Symptoms
(b) Diagnosis
(c) Treatment
(d) Prognosis

Most Ureteral Calculi are secondary, having arisen in the kidney, but a few are primary, arising in ureteroceles, ureteral diverticulum, or behind ureteral strictures. The chemical nature of these stones has been known for years, but recent studies by spectroscopy, x-ray refraction, and polarized light, have brought out more exactly the structural nature. This fact has not so far, influenced the treatment.

Causes of Calculus Formation

(1) *INFECTION*: Ordinary pyelonephritis is an uncommon cause of calculus formation, the two being rather uncommonly associated. The important type of urinary tract infection, and still one of the most difficult problems encountered in urological practise, is that caused by the urea splitting organisms such as bacillus proteus, and aerobactor aerogenes. These organisms produce an alkaline urine by breaking down urea to form ammonia, and calculi form in this urine with amazing rapidity, in some cases in as little as three weeks. Changes in the pH of the urine with recurrent infections can produce different components of a calculus.

(2) *SUPERSATURATION*: Urine is a supersaturated solution, and the salts are probably held in the solution by the colloids present in the urine, by the fact that the urine is acid normally, and probably other factors. Any upset of the urinary colloids, or a change in the pH of the urine, may cause precipitation of some of these urinary salts. In this connection, one must not forget the well-known alkaline tide which occurs after meals, or a false idea of the normal pH of the urine may be obtained, and efforts made to counteract by diet and medication what is really a normal physiological condition. An excellent method of checking the pH of the urine in the office is by use of nitrazine paper which covers quite a wide range.

(3) *HYPERPARATHYROIDISM*: This may be due to either hyperplasia or tumour of the parathyroid gland. In the presence of excess parathormone the calcium is mobilized from the bones, and the urine becomes supersaturated with calcium. This calcium may precipitate out in either the tubules of the kidney, or in the pelvis. The condition should be looked for in the presence of recurrent or multiple calculi, although it is a rare cause of calculus formation. The diagnosis is established by the estimation of the blood calcium and phosphorus.

(4) *VITAMIN DEFICIENCY*: Experimentally, vitamin deficiency causes keratinization of the epithelium of the renal pelvis, and some of these cells may slough off and be a nidus for stone formation.

(5) *METABOLIC DISORDERS*: About 10% of stones are made up of organic

constituents such as Cystine, Xanthine, Uric acid, or Sulpha. The first three are due to metabolic disorders, the last, to supersaturation of urine with the drug.

(6) *STASIS*: Stasis is met with in two circumstances. First — any obstructive urinary tract conditions will cause stasis of urine behind it. Secondly — prolonged recumbency, particularly in patients with severe bony injuries, is a precipitating factor in the formation of a great many stones. If a patient is flat on his back in bed, urine must drain uphill to the brim of the bony pelvis. Under these conditions, precipitation of the supersaturated substances in the urine occurs quite readily.

(7) *RANDALL PLAQUES*: These are small calcified areas at the apices of the papillae, over which the epithelium becomes ulcerated, and the calcium plaques separate off, forming the nidus of a stone. This factor has been experimentally confirmed on numerous occasions.

(8) *GEOGRAPHICAL DISTRIBUTION*: This is a well recognized factor. Calculus disease is extremely common amongst the people of India, for instance.

SYMPTOMS OF URETERAL CALCULI

There are four groups of symptoms which one may associate with ureteral calculi, namely: Pain, gastro-intestinal symptoms, disturbance of bladder function, and anuria.

Pain: The pain of ureteral calculus may be of two types. The first is the acute colic, the spasm of the ureter attempting to expel a foreign body from within its lumen. This pain can be excruciating as anyone who has experienced it knows. It may start in the back, or in the abdomen, and generally radiates downward, towards the scrotum and testis of the male, or the labia and inner thigh of the female. The pain may also radiate backwards towards the costo-vertebral angle. The lower the calculus is in the ureter, the lower down in the abdomen the pain is felt. The patient suffering from ureteral colic does not lie quietly in bed as in the inflammatory lesions, but rolls around, twisting himself into various postures in an attempt at getting relief. Colic is present in 80% of cases of ureteral calculi.

The second type of pain is of a different nature. It is a dull ache, a feeling of fullness, or a feeling of the side being clutched in a vise. This pain is felt in the back, in the region of the costo-vertebral angle on the affected side. This pain is due to back pressure from obstruction of the ureter, and is caused by dilation of the ureter and renal pelvis. It is most important to inquire about this pain in cases of ureteral colic, because the real danger of ureteral calculi is the damage they do to the kidney behind them, and persistent acute obstruction is extremely dangerous to a kidney. This type of pain is almost diagnostic of obstruction, and one should not be misled if it seems to subside and gradually disappear over a period of a few days. The obstruction may still be present but the acute phase is over, and re-absorption of urine from the pelvis and ureter are almost keeping pace with the excretion. The acutely obstructed kidney does not go on and quietly atrophy, but rather undergoes the same type of hydronephrotic change one sees with more chronic types of obstruction. The only difference is that the process goes faster, and the kidney may be rendered totally useless in as little as three weeks.

(2) *GASTRO-INTESTINAL SYMPTOMS*: Generalized abdominal cramps, nausea and vomiting are present in 60% of cases of ureteral calculi. In some one sees even a reflex ileus established which makes a differential diagnosis much more difficult.

(3) *DISTURBANCE OF BLADDER FUNCTION*: This is present in some 50% of cases of ureteral calculi. It is almost invariably present if the stone is down near the bladder, when frequent bladder spasms and almost continuous desire to void are not uncommon.

(4) *ANURIA*: The sudden suppression of urine is a frightening occurrence following a ureteral colic. Fortunately, it is rare. Anuria may be due to a reflex inhibition of a normal kidney on the other side to bilateral ureteral calculi, or to other disease or anomaly of the urinary tract. Solitary kidney, for instance, is present in about 1-500 persons, and a calculus impacted in this ureter will cause oliguria or anuria. Again, the other kidney may have been removed surgically, or undergone atrophy from pyelonephritis. Congenital hypoplasia, another not uncommon congenital anomaly, may

be present, in which case while the person still excretes a certain amount of urine, the urine excreted in incapable of keeping up with the body needs, and uraemia results.

DIAGNOSIS OF URETERAL CALCULI

History: The history of sharp, severe, colicky pain is usually very definite. It starts in the back or upper abdomen and radiates down towards the region of the testicle or inner thigh. Muscular rigidity on the affected side may or may not be present. Palpation of the abdomen between the spasms of colic may show an area of quite localized tenderness overlying the calculus. The urine may be entirely negative, and in 90% of cases will show microscopic red or white blood cells, and in 35% of cases will show gross blood.

There is one way in which a definite diagnosis of ureteral calculus can be established, and that is by use of the x-ray. A scout film of the abdomen is very useful, but will often miss a calculus, particularly if there is one lying over the bony structure of the body. Intravenous pyelography is an almost certain method of making the diagnosis. These pyelograms will show disturbed physiology on the involved side, and if sufficient pictures are taken, and there is a considerable degree of obstruction present, the location of the calculus can be pin-pointed by this method. Intravenous pyelography should be used much more often in questionable emergency cases. It is a simple procedure to inject dye into a vein and take four or five x-rays. The dye should be given quite rapidly in two to three minutes because diodrast is excreted by the renal tubules and most of the dye is excreted the first time it passes through the kidney. These pyelograms can be taken with a portable x-ray machine if necessary. The total time consumed need not be more than forty minutes and the information obtained, if only of a negative nature, is well worth the effort.

There is very little danger in using intravenous pyelography in these cases; but it does no harm in acute urinary obstruction. The only real contra-indication are severe renal disease where it is useless to inject the dye because it cannot be concentrated by the diseased kidney, and in cases of iodine sensitivity. An intra-dermal injection or a drop of the solution placed on the conjunctiva beforehand, will rule out iodine sensitivity. Another contra-indication is severe hepatic disease.

TREATMENT

On being confronted with a patient suffering from ureteral colic, the first consideration is relief of pain, and the only sure way of relieving pain is by use of a powerful narcotic such as morphine or pantopon. Do not hesitate to give it intravenously, the affect is much more rapid. Morphine gr. ¼ or Pantopon gr. 1/3, repeated if necessary in twenty minutes, will give relief in most cases of ureteral colic. It has been stated that in experimental animals the ureter is a neuromuscular tube with only pain and vasomotor fibers in it. Peristalsis is initiated by the presence of urine or a foreign body and not by nerve impulses. If this experimental work is true, it would seem to indicate that anti-spasmodics as such are of no value in treating ureteral colic.

Following control of the pain treatment of ureteral calculi must be individualized. Ureters vary in size in different individuals, and a patent calculus which one patient may pass easily, must be removed surgically in another. Even a small calculus may, if left too long in one situation, cause irreparable damage to the ureter, and lead to stricture formation and loss of the kidney. There are several points along the ureter at which a calculus may be held up. These points represent natural narrowings of the ureter. The first is at the uretero-pelvic junction, the second where the ureter crosses the bifurcation of the iliac arteries, the third at the brim of the fourth where the ovarian vessels in the female, and the vas-deferens in male, cross the ureter, and the fifth, at the intravesical portion of the ureter. As a general rule the higher the calculus is impacted, the more serious is the problem presented. A stone in the lower ureter, if it does not cause ulceration and stricture formation of the wall, is less dangerous than one impacted at the uretero-pelvic junction. In the former, the ureter takes the initial shock of the obstruction and dilates. In the case of the high impacted calculus the kidney is affected immediately. A kidney with a largely intra-renal pelvis is much more readily damaged than a kidney with an extra-renal pelvis because the pelvis will dilate

in the latter case before damage to the kidney will occur. Occasionally a calculus will, if left too long in one position, ulcerate through the ureter into the periureteral space or even into the abdominal cavity, resulting in extravasation of urine.

Infection also is of extreme importance. An infected kidney, in the presence of the ureteral calculus, is a surgical emergency. Drainage must be established as soon as possible, and if this cannot be accomplished by passing a catheter up the ureter, then open surgery should be instituted without delay. Delay in cases of this type inevitably leads to loss of the kidney, if not immediately, at a future date, and may even be responsible for a septicaemia. An acute pyelonephritis may become a pyonephrosis, or terminate in an atrophic pyelonephritis, the one renal lesion which appears definitely responsible for hypertension in a certain percentage of cases. With the new powerful anti-biotics to aid in control of infection, this is not as serious a problem as it used to be. Shotgun therapy with, say, penicillin, streptomycin, and chloromycetin is justifiable here while waiting for culture reports, or if none are available.

All calculi in the presence of severe infection should be left for a varying period of time to see if they will pass. While observing the patient one should make sure of a copious fluid intake which builds up pressure behind the calculus and helps force it down the ureter. As these patients so often have an upset gastro-intestinal tract, are nauseated and vomiting, this very often means intravenous fluids up to 4000 cc. per day. Unless there has been considerable loss of fluid from vomiting, 5% glucose in distilled water is preferable to any other solution. At this stage one may try a sympathetic block. If the ureter is a pure uro-muscular tube in which peristalsis is initiated only by the presence of urine or foreign body there is no justification for using sympathetic block. In addition to this, patients do not like this form of treatment, they much prefer having a spinal anesthetic, and the calculus manipulated from below. These patients should be ambulatory, and all the urine passed should be strained in an attempt at recovering the calculus.

If, with conservative therapy, the calculus remains fixed in the ureter there are two other methods of treatment open. The first is manipulation, the second is open surgery. Manipulative procedures are most valuable for a calculus impacted low down in the urinary tract where one can hope to obtain success in between 40-50% of the cases. Various instruments have been devised for extraction of these calculi, including baskets, corkscrews, the use of multiple ureteral catheters, ureteral dilation with various types of bougies, the injection of oil above a calculus, and the use of loop catheters. This latter is probably the most universally popular method in use at the present time, being relatively safe and fairly successful. All manipulative procedures on ureteral calculi have their complications. Perforation of the ureter with extravasation of urine, rupture of the ureter, loss of part of the instrument within the ureter, and engagement of the calculus with inability to extract calculus or instrument have all occurred. Extraction of a calculus from below should never be tried without first dilating the ureter. Surgery is the form of treatment to which one can always turn. Calculi high in the ureter should be approached through a loin incision. As the ureter approaches the brim of the pelvis it is much closer to the anterior abdominal wall, and is best approached through the muscle splitting incision. The lower end of the ureter is probably best approached through a supra-pubic incision, except for the rare case in the female where the stone can be palpated through the vagina and a lithotomy done through this approach. One danger of the supra-pubic incision is that with a dilated ureter, and a round calculus, the calculus may slip up above the brim of the pelvis in which case it cannot be removed through this incision. A pre-operative x-ray should always be taken immediately before the operation, to be certain the calculus has not changed its position since the last examination. The opening in the ureter should be closed with sutures which do not go through the ureteral mucosa but just approximate the musculature. Drainage should be instituted and left in situ until one is certain there will be no further leakage of urine, or until a sinus tract is formed. Urine in loose tissues causes an intense fibrosis, and may be responsible for ureteral stricture formation.

Experimental work is going on continuously in a search for solutions or combination of solutions which will dissolve renal and ureteral calculi. So far, none have been particularly successful. Subey's "G" solution, whose base is citric acid, is probably the most successful of those discovered so far. While this solution will dissolve the inorganic constituents of a calculus, it does not touch the organic. Experimental work is at present being conducted on ultrasonic waves as a means of destroying these calculi. The single, most important thing which one can advise at present in preventing the formation of further calculi is to have one's patient force fluids. The only really satisfactory fluid they can take in any quantity is water. A copious intake of water cuts down on the degree of supersaturation required of the urine, and also insures the washing out of small nuclei before they have a chance to become large calculi. Diet is of some importance in certain conditions. The organic calculi such as cystine, xanthine, and uric acid, can be prevented by maintaining an alkaline urine and control of the diet. An acid ash diet is probably still of some value in treating patients with an alkaline infection. An oxalate free diet is of no value in preventing the formation of oxalate calculi, according to experimental work done in Germany just prior to the last war.

PROGNOSIS

The prognosis of renal and ureteral calculi has changed greatly in the past ten years. These calculi are more common in the male than the female. They occur in middle age and equally on each side. Clinically, they are bi-lateral in 3%, but careful autopsy examination will show them to be bi-lateral in close to 30%. The advent of the anti-biotics has cut down the recurrence rate to its present 5%. This latter figure is a significant one. Before the advent of anti-biotics, the recurrence rate was closer to 30%, but with the elimination of infection in many cases it has been cut down to this figure. These patients should all be followed through the years. Calculi may be silent and may totally destroy the kidney before a patient is aware of it. Intravenous pyelography is a useful method of checking not only the function but the anatomy of the urinary tract, and the physician can assure himself that the patient is maintaining a copious fluid intake, the single, most important thing one can do to prevent the formation of more calculi.

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