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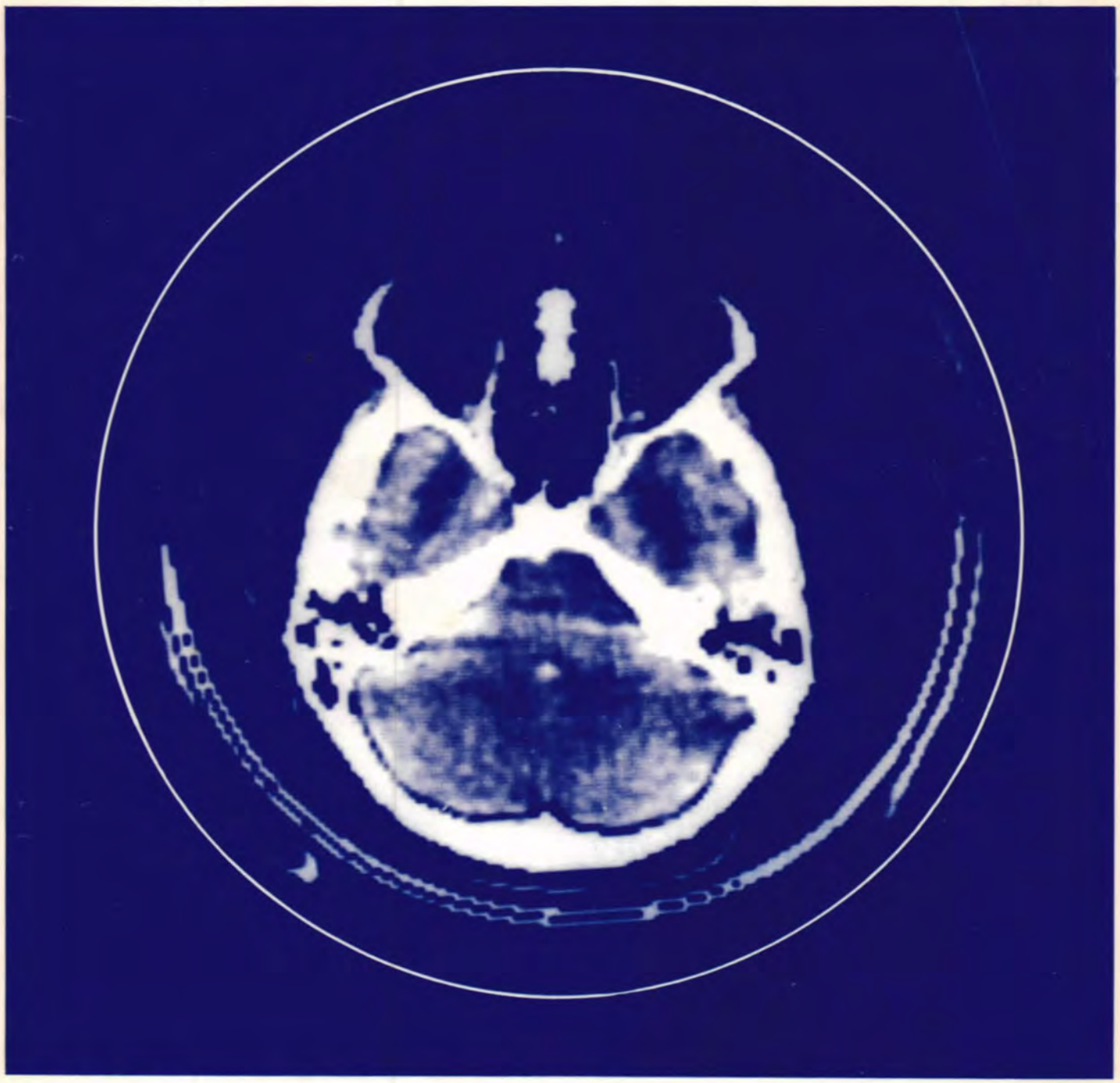

CT Scan: New Frontiers in Diagnostic Medicine

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MEDICAL JOURNAL

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From the Editor

The U.W.O. Medical Journal starts off a new season with this issue. As is usual, turnover in staff has meant delay in getting out this first issue. However, it is with optimism that we look ahead to the new year. Subscriptions have increased greatly over the last few months, and reorganization of subscriptions, advertising and the overall operation will hopefully pay dividends in subsequent issues. The next issues of the journal are expected to be mailed out at the end of January, end of March, and end of June.

It should be stressed that this magazine is nothing without its readers. Criticisms of articles, original research, viewpoints, book-reports, or reviews of medical problems will gladly be published in the journal. Medical students and doctors alike can help us in this regard.

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Sir William Osler: Man, Physician, Scientist

by Paul Potter

Sir William Osler (1849-1919) more than any other physician in the last hundred years has come to be universally regarded as the ideal clinician, educator and medical humanist. Throughout most of the world he symbolizes all a doctor can or should be: a scientist, a cheerful, loving practitioner, a man of letters, an understanding teacher and leader of men. What kind of a man was Osler?

I begin with a sketch of Osler's life. Born the son of an Anglican clergyman in Bondhead, about thirty miles north of Toronto, he spent his school days in Ancaster, Barrie and Weston. Between 1867 and 1870 he attended Trinity College and the Toronto Medical School, where he completed his pre-clinical training before moving to McGill which offered unquestionable "hospital advantages". On completion of his M.D. in 1872 he went abroad for two years study under the great masters of the day in London, Berlin and Vienna. Shortly after his return to Canada he became Professor of the Institutes of Medicine (histology, physiology, pathology and clinical microscopy) at McGill, a post he held until 1884. Next he became Professor of Clinical Medicine at the University of Pennsylvania in Philadelphia, then the leading medical institution in North America. In 1889 he was called to Baltimore to take the post of Physician-in-Chief at the newly founded Johns Hopkins Hospital, joining Wm. Welch, W.S. Halsted, H.M. Hurd and Howard Kelly. From September 1890 until December 1891, when the hospital services had been set up but medical students not yet enrolled, Osler spent much of his time writing the famous **Principles and Practice of Medicine,** a thousand-page textbook which he revised faithfully every three years for the rest of his life. The Baltimore period, which lasted until 1905, also included marriage in 1892 to Grace Linzee Revere (b. 1854), the widow of Dr. Samuel Gross jr., and birth of the couple's only child, Edward Revere Osler (1896-1917). The family's final move was to England where Osler became Regius Professor of Medicine in the University of Oxford. At the coronation of George V in 1911 he was honoured with a baronetcy.

In the course of this illustrious medical career Osler's most important contribution to the development of medicine was the introduction of German medical science into the Anglo-saxon setting. The period 1860-1890 had witnessed the most momentous change in medical theory and practise in all of history: e.g. the introduction of new graphic, microscopic and chemical methods of investigation into both clinical and experimental fields; the invention of many new diagnostic tools; the discovery of microorganisms as the causal agents of infectious diseases; the first use of toxoids and anti-toxins to produce immunity; a marked improvement of surgical and obstetrical procedures. Most of this progress had begun in the clinics and institutions of Germany. Osler, who had become thoroughly familiar with the German methods and organization, was determined to introduce them in North America, and the Johns Hopkins Hospital, beginning from scratch without all the dead-wood and tradition which would have hindered such at revolution at an already established institution, provided him with the perfect opportunity. In a **Lancet** article of 1911 he describes the organization thus: "The medical unit consisted of about seventy beds (the number gradually increased to above one hundred), a large out-patient department, and a clinical laboratory close to the chief wards. In charge was the head, **ex officio** Professor of Medicine in the university; a resident staff of first, second and third assistants (nominated by the professor), a fourth assistant in charge of the laboratory; and, in addition, four house physicians appointed annually. The first assistant, a man of experience, remained for some years, and in the absence of the chief was in complete control of the department. He had rooms in the hospital and was paid 200 a year, half by the hospital, half by the university. All the assistants were engaged in teaching and were paid. the appointments were for no fixed period, and during the sixteen years of my control there were only five first assistants . . . In each instance, these men had lived as junior and senior assistants in the hospital for seven, eight, or more years . . .

I have always felt that the success which followed this experiment - for such it was in hospital work in the United States, at any rate - was due to the type of men we had as senior assistants in the various departments. We chose the best that were to be had; the nomination was in the hands of the chief of the department; they were given responsibility, encouraged to teach and to write, and their professional development was promoted in every way. An excellent plan, greatly favoured by the Director of the hospital, Dr. Hurd, was to allow the senior assistants every couple of years a vacation of from four to six months to go abroad for study." The second way Osler introduced "scientific" medicine was through his textbook, a marvel of clarity, thoroughness, order and readability.

An insight into Osler's personality is best won by reading the collection of essays entitled **Aequanimitas** which is presented to each Canadian medical student on graduation. These works reflect the subtle intermingling of hope, fear, closeness and distance which must have characterized the man. I close with a passage from Osler's farewell address "L'Envoi" delivered in New York in 1905:

"I have had three personal ideals. One to do the day's work well and not to bother about to-morrow. It has been urged that this is not a satisfactory ideal. It is; and there is not one which the student can carry with him into practice with greater effect. To it, more than to anything else, I owe whatever success I have had--to this power of settling down to the day's work and trying to do it well to the best of one's ability, and letting the future take care of itself.

The second ideal has been to act the Golden Rule, as far as in me lay, towards my professional brethren and towards the patients committed to my care.

And the third has been to cultivate such a measure of equanimity as would enable me to bear success with humility, the affection of my friends without pride and to be ready when the day of sorrow and grief came, to meet it with the courage befitting a man.

What the future has in store for me, I cannot tell - you cannot tell. Nor do I care much, so long as I carry with me, as I shall, the memory of the past you have given me. Nothing can take that away.

I have made mistakes, but they have been mistakes of the head not of the heart. I can truly say, and I take upon myself to witness, that in my sojourn among you:--

'I have loved no darkness,
Sophisticated no truth,
Nursed no delusion,
Allowed no fear.'"

An Introduction to the CT Scan

by Keith J. Goulden

The Computerized Transaxial Tomograph (CT scan or EMI scan) was first used in 1972 by Dr. J. Ambrose[1] at Atkinson Morley's Hospital in Wimbledon, England. This machine is now in use throughout the world, having become an integral part of the modern neurologic diagnosis. For the first time, there exists a fast, easy, non-invasive method of visualizing pathology inside the skull. As well as being safe and easy, the CT scan gives a vastly superior total picture of the structure of the brain. It allows one to see the ventricles, white matter and grey matter, as well as any gross pathology such as tumor, infarction, hemorrhage or foreign body. A CT scan is indicated for all patients when a possible structural lesion in the brain is being investigated.

The normal CT scan consists of a series of eight "slices" across the head to give a three dimension picture of its neuroanatomy. (Fig. 1). Four sections are taken, ideally at 3, 5.5, 8 and 10 cm. above and at a 20-25 degree angle with orbital-meatal line. Each section is made up of two slices 1.3 cm. thick, so that eight views are given as shown. With practice, many lesions can be seen and accurately located from the CT scan, but it is obvious that neuroanatomical organization must now be re-learned from a new perspective (as must the anatomy of the rest of the body, with the introduction of the full-body scan). Indeed, neuropathologists now occasionally cut the brain in the "EMI" fashion. The structures of the brain can now be demonstrated in vivo without disturbing them in any way. The CT scan may be the biggest advance in Radiology since the discovery of the x-ray.

The Roentge-ray or x-ray was discovered in 1895, and has been used for over 70 years as a diagnostic aid. The x-rays are created inside a vacuum tube by passing a very high voltage current from a cathode to a tungstenanode. The high velocity electrons strike the tungsten and create x-rays, which are then allowed to pass through the patient. A "negative" image is created on a photographic film placed on the opposite side of the patient due to the fact that the various bodily tissues absorb x-rays in different amounts. Classically, there are four tissue densities different enough to be detected-air, water (or soft tissue), fat and bone. These absorb x-rays in different enough amounts that a collection of one of these tissues can be seen in contrast with any of the others (for example, bone can be differentiated from connective tissue and the kidney can be seen outlined in peri-renal fat). Some structures can be better visualized by injecting contrast material (air or opaque dye) into one of the fluid spaces such as the bloodstream, GI tract, GU tract, CSF circulation, and so on. This artificially creates an interface between structures, which can then be seen on the x-ray film. Even with the aid of contrast, one is still trying to visualize a three-dimensional structure consisting of many tissues in two dimensions and four tissue densities. Thus the resolution is poor, and structures which fall in the same line become superimposed on the film. These structures which "line up" can be resolved, either by taking views from several angles or by simultaneously moving the tube and film about a focal point, mechanically blurring out all but a single plane through the structure. This process is called tomography, and provides a somewhat inelegant solution to the problem. It also does not resolve the subtle differences in tissue density which simply cannot be detected on traditional x-ray films.

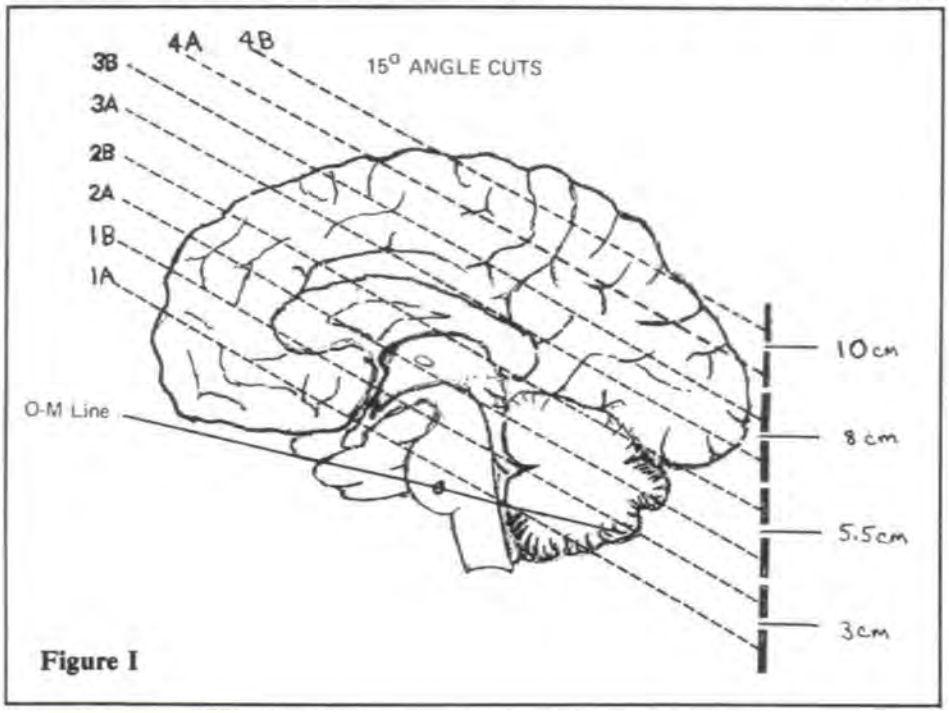


Figure I

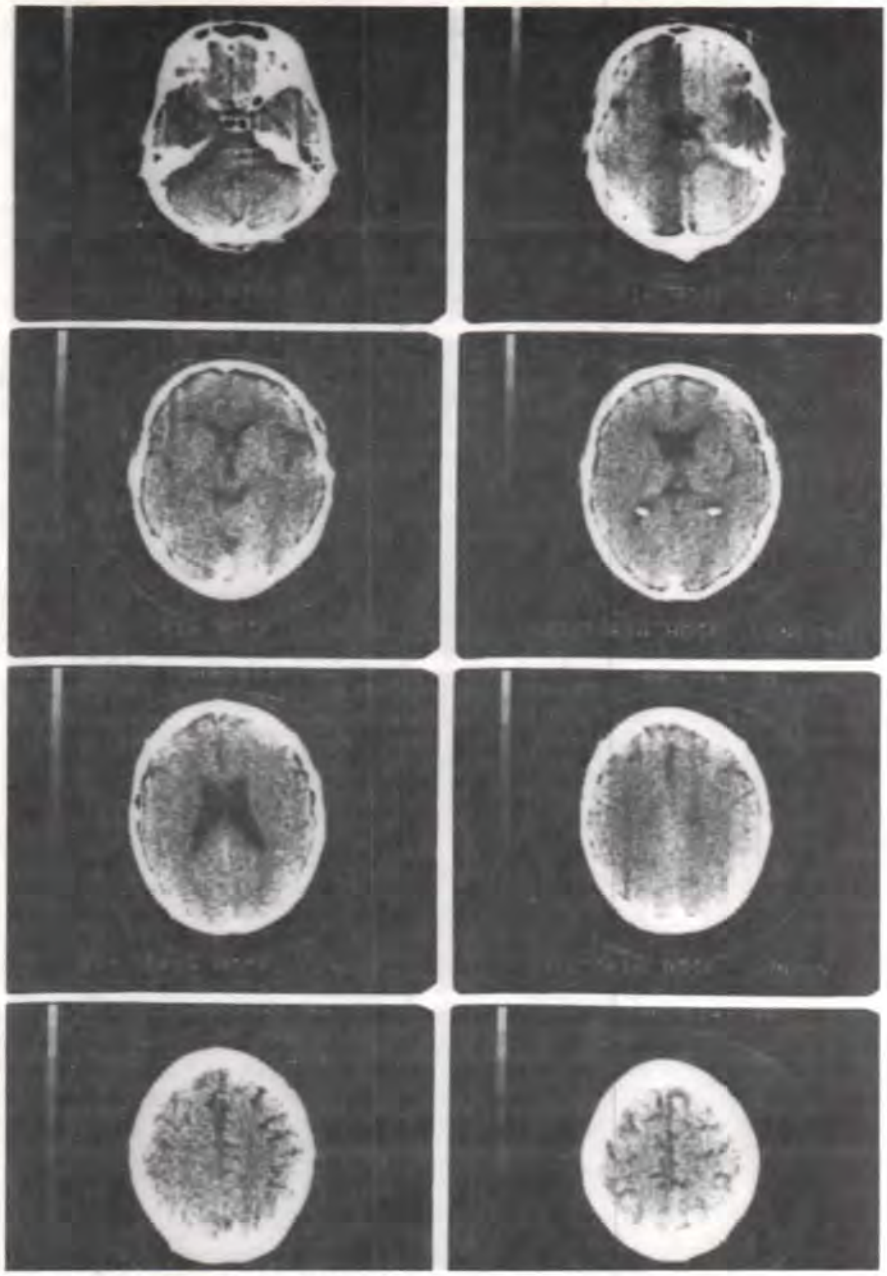
One very important example of a structure that is made up of nothing but subtly different tissue densities is the brain. A plain skull film shows the bones of the skull, the air sinuses, and any extra collections of calcification within the brain (such as the pineal gland or a chronic lesion). A lesion in any other structure can be detected only by inference, from changes in the visible structures. For example, raised intracranial pressure is shown on the skull film by erosions of the bone, especially the sella turcica. The injection of air into the ventricles (pneumoencephalography) allows one to visualize direct changes in those structures and to infer the presence of masses impinging on them. Another place in which contrast may be used is the bloodstream (angiography). This shows vascular pathology and can infer the presence of mass lesions by changes in the amount or position of the vascularity. One rather non-specific method of demonstrating abnormalities of the brain does not involve x-radiation at all, but rather the differential uptake of a radioactive isotope. The isotope brain scan is thus an easy screening procedure but often lacks resolution or specificity. A completely

different way of investigating the brain is by the electroencephalogram, or EEG, which shows the pattern of electrical activity in the brain.

These procedures are all useful in the investigation of pathology in the brain, and can demonstrate gross pathologic processes directly. More often, however, they simply suggest the nature of the lesion, and can be ambiguous or even misleading. The more complex contrast procedures are quite time consuming, require considerable skill to carry out, and involve discomfort to the patient. As well, they are invasive procedures which therefore carry an appreciable risk. Since the introduction of the CT scan, these procedures have taken on a more specific and occasionally secondary character. They remain very useful, but are now used in fewer instances. This is especially true of pneumoencephalography.

Computerized tomography was conceived by W.H. Oldendorf, a neurologist, and developed between 1967 and 1972 by G.N. Hounsfield, an engineer at Electrical Musical Instruments.[2] The idea is to determine very accurately the radiodensity at a given point inside the skull by integrating a series of readings taken at different angles through that point and all others in the brain. That is, if one passes a series of parallel x-ray columns through the object and then rotates the machine and takes another series of readings, a grid system covering the brain can be created. A large number of calculations will give a precise value for the radiodensity (measured as an absorption coefficient) at each point on the grid. These values can then be printed out as numbers, or displayed as a variation in brightness of points on a cathode ray tube. From the image on the tube, a photograph can be taken to give a permanent picture of the internal structures of the skull. If a large number of readings are taken at many angles, a very small difference in radiodensity can be detected. These very small differences in radiodensity could not previously be determined, but due to the large amounts of data than can now be processed by computers, they can now be treated as significant differences. This allows for an almost infinite variation in tissue density that can be displayed and an artificial interface is no longer necessary to visualize a particular tissue.

The original EMI scanner operates as follows: the patient's head is placed in a latex cap which is surrounded by water to press firmly around the skull so that there is no sharp air/bone interface (a technical detail). A transversely directed collimated x-ray beam 26 mm x 3 mm thick is passed through the head and detected by two gamma sensitive crystal scintillation counters and photomultipliers. These break each image into 160 separate readings of photon transmission. Thus one x-ray beam passing through is broken up in 2 lines of 160 readings, each 3 mm x 13 mm. The gantry then rotates one degree, and another traverse is made. This continues through 180 degrees, taking about 5 minutes. The computer then processes the 28,800 readings (160 x 180) for each line, giving two views through the head approximately 1.5 cm. apart. These images are made up of the absorption coefficients of 25,600 1.5 x 13 mm (thick) pixels which are displayed on the cathode ray tube as a 160 x 160 matrix.



"The eight views of the brain seen in an almost normal CT scan."

The "whiteness" of each square in the marix is proportional to its absorption coefficient, which has a range of values from -500 (air) to +500 (dense bone) measured relative to water (given a value of 0). The exact value at each point can be measured precisely but the difference between tissues (eg. fresh blood (15-20) and a clotted blood (20-40) can usually be easily seen. This represents an increase in the resolving power of our diagnostic instruments, going from previously seeing only four tissue densities to being able to differentiate an almost limitless range of tissues. The radiation dose for one section is about one third that of a normal skull film, so the total scan dose is only 1.0-2.5 rads. Intravenous contrast is usually administered to enhance vascular tissue and the scan is then repeated.

The only difficulty with the scan apart from the technical complexity is that any movement of the head changes the position of the points on the grid relative to each other and results in artefact on the scan. Sedation is often necessary, especially in children.

Improvements have recently been made to the CT scanner, so that the technical procedure becomes faster and easier. The need for the latex cap and water has been eliminated by improving the computer program to correct for the air/bone interface. The scan time has been reduced, which reduces the chance for movement artefact. An integration program is available which will give coronal and sagittal views from the transverse one. The most exciting "improvement" has been the introduction of the full body scan, which will do a chest scan, for instance, in 20 seconds with 4 times the present resolution (to the quality of a television picture).

The advantages of the scan are obvious. It is a non-invasive easily tolerated, low dose radiologic procedure, making it much less aggravating or risky to the patient. It is useful for early detection and global assessment of almost any gross pathological process in the skull cavity. It is also useful prognostically, and in following the progression/regression of a lesion. It allows one to directly visualize many lesions that could previously be detected only by inference. Since CSF can now be differentiated from the tissues of the brain, the ventricles can be seen without introducing air so that the scan is very useful in detecting hydocephalus and evaluating shunts. Edema can also be seen. Since necrotic and dysplastic tissue can now be differentiated from normal tissue, tumors and cysts can now be seen and often classified.

The CT scan is not perfect, however. It sometimes does not demonstrate small tumors near bone or in the brain stem, pituitary fossa or cerebellopontine angles. Arteriovenous malformations, berry aneurysms and small subdural hematomas are sometimes better shown by angiography. There have not been many followup studies reported to date, so the incidence of false-negative diagnosis has not yet been well established.

The initial cost of a CT scan is high, (about $600,000.) but can be justified, as can the running cost of the machine (about $200,000./year). Apart from any benefit derived from its improved diagnostic capability, there are some economic advantages to the scan. Many patients who were previously admitted for the more complex procedures can now be investigated as outpatients. There is less demand on staff to run the equipment - one technician may do the scanning, with a radiologist available for supervision and contrast injections. The CT scan also improves the capability of the other procedures because with an easily available second check the seriousness of a false-positive diagnosis is diminished. This decreases the number of false-negatives for the other procedures, as any doubtful positives can be checked on the CT scan.

There is always a tendency to overuse new equipment, and the CT scan is doubly tempting because it is also easy and fast. One understandable reason that new equipment is overused is that its area of usefulness has not yet been defined. It is not easy to predict when a new procedure will be of little use, and it is often interesting to find out what the scan will show in a certain case. A test should not be done just because it's there, especially in the case where there are already clear indications as to treatment and/or prognosis. However, the CT scan should be used as part of the work-up of the neurologic patient, so long as it is indicated. There is already a heavy demand on the machines which are available due to their novelty and the "back-log" of patients who are still being investigated from years gone by, so some control should be maintained over who gets a scan. There will never be a substitute for a good history and physical examination and the CT scan is still a test, which should back up a clinical diagnosis.

The CT scan is a technical advance, and like all technical advances, it creates problems as well as solving them. Along with the increased knowledge gained with this device must come increased responsibility and more difficult decisions. The information given by the CT scan can, in some cases, give indications against continuing treatment that might otherwise have been tried, and in other cases contraindicate any treatment at all. In many more instances, however the CT scan has shown lesions that were previously seen only by pathologists, and has greatly increased our understanding and control of many conditions. Along with the full body scan, the CT scan has greatly improved the diagnosis of pathologic processes, and its capabilities must soon become familiar to all doctors.

This paper was written during the summer of 1977, in consultation with Dr. R. Coates and Dr. G. Hinton. It was written as part of a research study of the value of the CT scan in Infantile Hemiplegia, made possible by a grant from the P.S.I. Foundation.

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Clinical Hypnosis in General Medicine

by Edgar A. Barnett, M.D.
Daniel L. Stewart, M.D.

Introduction

There is an increasing dissatisfaction both in the medical profession and outside it with the lack of progress being made by Western orthodox medicine in dealing adequately with the wide range of crippling diseases to which man is heir. The tremendous recent upsurge of interest in acupuncture bears witness to the crying need for effective alternatives to the healing methods of traditional medicine.

During the late forties and early fifties when the authors were early in their medical careers, the advent of the antibiotics and the psychotropic drugs appeared to herald a new era in which every malady would soon be cured by the appropriate drug. Although this illusion is still being sponsored by the drug houses we are aware that it is still but an illusion. With this in mind, many physicians have looked outside orthodox medicine to discover other techiques for healing. Hypnosis is one of these. In familiarizing themselves with the techniques of clinical hypnosis the authors have found it to be such an effective clinical tool in many instances that after many years in family medicine they separately decided to limit their practices to the study and practice of clinical hypnosis.

This article represents their concerted view of the present place of clinical hypnosis in general medicine today with some predictions regarding its future development.

History of clinical hypnosis

No review of the present place of clinical hypnosis can be complete without some brief mention of its fascinating history.

Virtually all of the ancient civilizations, including those of Babylonia, Egypt and Greece, practiced 'temple sleep' in which sick and ailing dupplicants went into a trance. There are records in Greek which report the cures of numerous disorders such as paralysis, ulcers and abscesses. The laying on of hands and faith healing is related to hypnosis. In A.D. 496, King Clovis of France touched a young page commanding him to get well, and this he did. Consequently for the next ten centuries the royal touch became an accepted tool of healing both in England and France. It is known that both in the sixteenth and seventeenth centuries hypnotherapy was widely practised.

However it was not until 1766 when Mesmer wrote his thesis on the influence of the heavenly bodies on healing and his theory that animal magnetism was curative, that an attempt was made to find a scientific explanation for the phenomenon of hypnosis. Mesmer) might be regarded as the first medical hypnostist. He found it difficult to practise his "animal magnetism" techniques in his native Austria so he moved to Paris where he became very famous and very successful, literally treating thousands of patients many of whom were influential and wealthy.

Anton Mesmer's practice of hypnosis was totally unlike anything seen today. His patients sat in a circle in a darkened room with soft piano music playing in the background. They sat round a large tub containing bottles of iron filings and holding on to projecting iron rods. Then, in impressive flowing lilac-coloured silken robes Mesmer would appear carrying an iron rod with which he would touch the afflicted persons and transfer them his curative "animal magnetism". This was supposed to cure any disorder and in fact frequently did as many actually testified. However the King of France eventually prevailed upon to set up an investigating Royal commission headed by the famous Benjamin Franklin and including Dr. Guillotin. This commission, after exhaustive investigation found that none of the observable effects were due to magnetism of any kind. They concluded that imagination and not magnetism was responsible for these effects (which often included convulsions). The conclusion effectively killed Mesmer's practice and he eventually died an obscure death in Germany at the age of eighty-one, still strong in the belief of his animal megnetism.

However, mesmerism, as hypnosis was then called, did not die with Mesmer and there were many of his former disciples successfully practising his techniques.

A Scottish surgeon practising in India, James Esdaile by name, decided to try mesmerism and was surprised to find that it worked. In fact it worked so well that he was able to perform thousands of surgical operations with his patients in a mesmerised state. The measure of his success lies in the fact that not only was he able to perform at least three hundred quite major operations without any apparent evidence of pain in these pre-anesthetic days, but that his operating mortality rate fell from 50 percent to 5 percent! There was a great deal of opposition to Esdaile and his work and the medical journals refused to publish much of it. This was probably because Esdaile still believed in the animal magnetism theory.

It was another Scottish physician, Dr. James Braid, who after being initially very skeptical about mesmerism, became impressed by the phenomena of the state and began to investigate it. He concluded that these effects were due to a state he called neurohypnosis (nervous sleep) since they were produced by getting the subject to look at a bright light until his eyes were tired.

With the onset of chemical anesthesia, interest in hypnosis waned for a time until the eminent Charcot became interested in the phenomenon. It was Charcot's belief that hypnosis was a pathological state existing only in hysterical patients and this belief brought him into sharp conflict with the Nancy school. This school led initially by Liebeault and later by Bernheim, felt that hypnosis was not a pathological condition and that the phenomena described by Charcot was produced by him in the hypnotized subject by verbal suggestion.

The great Sigmund Freud studied hypnosis with Charcot and later with Liebeault and Bernheim and much of his discoveries and understanding of the unconscious mind came from his use of hypnosis. However with the discovery of the effectiveness of free association Freud developed his technique of psychoanalysis and dropped hypnosis. He probably did this because he was aware of the prevailing prejudices against the use of hypnosis and because he found that many of his patients were not adequately hypnotizable for his purposes.

There was a great resurgence of interest

in hypnosis after each of the great world wars when it was found that a reaction in hypnosis often enabled shell-shocked victims to recover and once again function normally.

Today most of the medical associations in the western world recognize hypnosis and its use in medical practice. There are now many societies such as The American Society of Clinical Hypnosis, The Society for Clinical and Experimental Hypnosis, The International Society of Hypnosis, The British Society of Clinical Hypnosis, The Scottish Society of Clinical Hypnosis, The Ontario Society of Clinical Hypnosis, and various other provincial societies in Canada and State Societies in the U.S.A. etc. whose objective is to promote the acceptance of clinical hypnosis as an ethical clinical tool.

The Nature of Hypnosis

Although the phenomena of hypnosis, later to be described, are striking and distinctive, there is still no clear understanding of how they occur or what is the true nature of the state in which they occur. There are many theories as to the nature of hypnosis but there is as yet none that is universally accepted. In the absence of the observable phenomena of hypnosis there is nothing to specifically identify it. For example, electoencelographic changes are absent.

Although a subject in deep hypnosis may appear to be asleep, hypnosis has been conclusively proved not to be sleep. Neither is the patient in hypnosis unconscious. In fact his awareness may be shown to be greater than in his normal conscious state.

It can safely be said that hypnosis is an altered state of consciousness without being able to clearly define what that state is.

It is generally agreed however that hypnosis is associated with an increase in suggestibility proportional to the degree of hypnosis. Increased suggestibility refers to the ability of the hypnotized subject to respond and act upon a suggestion without subjecting this suggestion to the scrutiny of his critical faculty.

The Phenomena of Hypnosis

The production of hypnotic phenomena depends upon the acceptance of suggestions of varying degrees of difficulty. The acceptance of the least difficult suggestions e.g. relaxation, is associated with light hypnosis and the most difficult e.g. complex post-hypnotic behavior is associated with deep hypnosis.

Few of the phenomena of deep hypnosis, though important in the stage hypnotist's programme, find any useful place in clinical hypnosis. However the following list of hypnotic phenomena will give a clearer understanding of the varying depths of hypnosis.

Depth	Phenomena
Insusceptible	
Hypnoidal	Relaxation Fluttering of the eyelids Closing of the eyes More complete physical relaxation Ideomotor responses
Light	Eye catalepsy Limb catalepsy Glove anesthesia
Medium	Partial Amnesia Post hypnotic response Hypermnesia Age regression Simple hallucination
Deep	Profound hypnosis with eyes open possible Bizarre post hypnotic acts possible Positive and negative hallucinations Total amnesia

Objective characteristics of hypnosis

Following the induction of hypnosis using a relaxation technique, the subject gradually assumes a relaxed, slumped position in which he tends to remain without movement unless directed to do so.

In deep hypnosis, movement or speech is characteristically slow and economical. It is perhaps the diminution of spontaneous movement which is one of the most constant objective characteristics. There are many other signs such as blepharospasm and conjunctival injection.

Subjective characteristics of hypnosis

Each person will react to hypnosis in his own idiosyncratic fashion but common subjective feelings described include feelings of floating, of feeling detached from the body, of feeling warm and comfortable and of becoming less aware of the external world.

Common Fallacies about Hypnosis

The popular presentation of hypnosis in fiction, films and television concerns itself with an exaggeration of the uncommon phenomena of deep hypnosis and so a number of false beliefs about hypnosis have arisen.

1.) **Amnesia**

It is commonly believed that hypnosis is synonymous with amnesia. This is because many people think of hypnosis as something like sleep or the unconsciousness of anesthesia in both of which amnesia is a feature. In actual fact amnesia is quite uncommon following hypnosis in the clinical setting.

2.) **Power of the hypnotist**

The newcomer to hypnosis expects that in hypnosis the operator will be able to make him do things some of which he may want to do e.g. stop smoking and some of which he may not want to do. In fact the hypnotist has no such power. He can make the suggestion to do something but the subject in hypnosis never loses his power to decide whether or not he will accept the suggestion given to him.

3.) **Powerlessness of the subject**

A hypnotized subject is, as already pointed out, always in a position to make decisions and is not devoid of will power and decision making power. In fact many good subjects can be found among those with strong personalities and high intelligence.

It is the belief of most hypnotherapists that they do not 'hypnotize' anyone. Rather it is the role of the hypnotist to teach his subject how to enter the state of hypnosis in which he can act upon suggestions given by the hypnotist or by himself (self hypnosis).

The Induction of Hypnosis

In a susceptible subject the induction of hypnosis proves to be a relatively simple matter. There have been many methods devised which are successful in inducing hypnosis. Each operator tends to develop his favourite techniques. It is clear that no one method has a universal superiority over any other. One common method is based upon James Braid's original technique. In this, the eyefixation method, the patient is asked to gaze at a spot until the eyes are fatigued sufficiently that they

close. This process of fatigue is hastened by appropriate suggestions that they are getting tired. Another method which can be combined with eye fixation is to suggest relaxation of different parts of the body until the whole body is relaxed and the eyes are closed. This is called, appropriately, the progressive relaxation method.

Once eye closure is achieved, if further deepening is required then more difficult suggestions are given such as limb catalepsy (unable to move a specified limb) and glove anesthesia. The expert soon learns how deep in hypnosis his subject can or need be induced to go.

Hypnotisability

The practitioner in hypnosis soon learns that some people can be induced to enter hypnosis very deeply and some simply cannot and there is a wide range in between.

In general terms, it appears that some 5 percent of the population at any given time is insusceptible to hypnosis although some of these may enter hypnosis at another time. Some 15 percent enter a light state of hypnosis and perhaps 20 percent enter a very deep state with the remainder somewhere in between. It is apparent from these figures that 95 percent or more of the population can enter some useful degree of hypnosis and it is this fact which is so important in the use of hypnosis in clinical practice.

Children between the ages of 8 and 12 appear to be the best hypnotic subjects with hypnotisability gradually diminishing with age. However there are many elderly people who are excellent hypnotic subjects and some children who are poor subjects.

There appears to be some correlation of hypnotisability with one's ability to imagine and this brings us right back to Benjamin Franklin and his conclusion that mesmerism was due to imagination. It is fortunate that anxious people tend to be unusually imaginative.

Indications for Hypnosis

The most important phenomena of hypnosis which are of real value in general medicine are relaxation and analgesia. The practitioner who learns when these phenomena can be applied already knows some of the best indications for the use of hypnosis in his practice.

1.) **Anxiety** This sympton is present in so much of clinical medicine that the relaxation of hypnosis is almost always of great value. A confirmation of the prevalence of anxiety, if such be needed, is to be found in the six billion dollar annual business that Roche enjoys in the sale of its tranquilizer, Valium. One of the simplest things that the physician can suggest in hypnosis is relaxation. This suggestion is surprisingly readily accepted by the anxious person and merely by teaching the anxious patient hypnosis and relaxation many will be able to reduce or eliminate their dependence upon tranquilizers.

There are many medical circumstances in which apprehension is an important and debilitating factor. The emergency situation and the preoperative situation are examples where hypnosis can rapidly reduce anxiety as effectively as any drug and in much shorter time and without side effects.

2.) **Pain**

Any painful situation is accompanied by anxiety and often the relief of that anxiety measurably reduces the pain but direct suggestions for the relief of pain will often be totally effective rendering the administration of an analgesic or an anesthetic unnecessary. This is particularly of value in the emergency situation where drugs may not be at hand. There are some emergency departments where hypnosis is being used extensively and it has been found that such departments are quieter and more relaxed than prior to the use of hypnosis.

Again the sufferer from chronic pain can benefit enormously from the use of hypnosis and self-hypnosis and this may obviate or diminish the dependence on other analgesics.

3.) **Obstetrics**

Relaxation and the relief of pain are immensely valuable in training the pregnant for a comfortable delivery. Deliveries using hypnosis can be totally pain free, but in any case the need for analgesics is diminished markedly and the infant benefits accordingly.

The psychosomatic disorders

A large group of disorders in which orthodox medicine finds its therapeutic abilities severely limited are the psychosomatic disorders. This is evidenced by the long list of therapies often utilized in these cases. Common examples include migraine, functional diseases of the alimentary canal such as colitis and peptic ulcers, hypertension, asthma and some skin disorders. Many of these will respond to simple suggestions of relaxation and optimism. Others will respond to the hypoanalytical approach of the more skilled hypnotherapist using uncovering techniques to elucidate and reduce the need for the crippling psychosomatic symptoms.

Therapeutic aproaches

It seems appropriate at this point to identify the therapeutic approaches available to the hypnotherapist. They are:

1.) **Direct suggestion**

Although we do not know how this works we know that a direct suggestion to a person in hypnosis can be acted upon in such a way that responses not normally under voluntary control can occur. We believe that this must occur through the mediation of the autonomic nervous system. Slowing of the pulse rate, lowering of the blood pressure, dilatation of peripheral blood vessels or their constriction, alteration of hormone balance, can all occur as a result of direct suggestion. It is believed that in some similar way many of the direct suggestions given in hypnosis are successful. The anesthesia which can occur as the result of direct suggestion is often extremely profound and unsurpassed by any chemical analgesic.

Much of the reputation enjoyed by hypnosis over the years has been due to this little understood effect of direct suggestion which can be wisely employed by any competent physician. Even the simple suggeston of well being is one that is often readily accepted and acted upon with good effects in the clinical situation.

2.) **Self hypnosis**

As has already been stated it is now commonly accepted that all hypnosis is in reality self-hypnosis and once a patient learns how to enter hypnosis he or she can do this whenever necessary and administer any direct suggestions, e.g. for the relief of bronchospasm or pain, as well as the hypnotherapist could. Training in self hypnosis is therefore invaluable.

3.) **Hypnoanalysis**

The third important therapeutic approach is that of hypnoanalysis and it is in this area where the greatest advances in clinical hypnosis has been made in recent years. These techniques are used to uncover the origin and the emotional cause of an illness. It requires considerably more skill and experience in the use of hypnosis than the other approaches.

These three approaches can best be illustrated by considering the hypnotherapy of migraine.

Direct suggestion would be initially used to teach the tense migraine patient to relax both during and between attacks. This alone might be enough to reduce the frequency and severity of the migraine attacks.

Self hypnosis should be taught so that the migraine sufferer can reduce his own headaches. He might do this for example by suggesting warmth to a hand and placing the warm hand over the painful area and suggesting that the warmth will take the pain away. With this or some similar technique many migraine sufferers have gained complete control over their headaches.

Hypnoanalysis, when successful, can uncover the reasons why a patient has utilized migraine as a response to his problems. For instance he may find that he will not allow himself to express legitimate anger and that this anger builds up until he gets an attack. Such a discovery gives him a means whereby he can void further attacks namely by allowing himself to express his rightful feelings.

Education in hypnosis

As has been mentioned there are many

societies of clinical hypnosis in Canada and North America all of which provide education and training in hypnosis by means of seminars and workshops. The Ontario Society of Clinical Hypnosis, 243 St. Clair Avenue West, Toronto is such a society. It now has a membership of over four hundred members membership being available to physicians, dentists and psychologists and students of these disciplines. It is hoped that training in clinical hypnosis will soon be part of the curriculum of the undergraduate. In some universities such training is available on an elective basis.

The Present Status and Future Expectations of Hypnosis

There has been a remarkable resurgence of interest in clinical hypnosis--and for good reason. For example, a great deal of research has been done in North America concerning the part played by emotional distress, hopelessness and loneliness in the etiology in cancer and, using hypnosis, imagery and counselling it is being found that cancerous lesions can be caused to regress and apparently disappear when life becomes worthwhile. There is a fascinating new field of discovery emerging in which, by using hypnotic uncovering techniques, it is being increasingly realized that many occlusive cardiovascular diseases such as coronary thrombosis, pulmonary embolism and venous thrombosis are due to a hidden suicidal death wish in some cases. It is possible by using hypnotic uncovering techniques to discover the hidden suicidal mechanisms that are present in many lonely persons and by regression to understand why this is so. Hypnosis is being used with success in such varied conditions on rheumatoid arthritis, ulcerative colitis, phobias, and often when orthodox medicine and psychiatry have completely failed. We are just beginning to feel our way into a new approach to medicine with wider horizons of hope and challenge using clinical hypnosis.

There are now many physicians who have decided to restrict their medical practice to this extremely interesting specialty. It is our belief that more physicians will take this step in response to the increasing demand for this effective therapy, but we believe that medicine will best be served by each physician who becomes interested in hypnotherapy trying it out in his own practice and discovering how it helps when all other methods have failed. In this way clinical hypnosis will not be the last resort, but often the method of choice.

A Short Guide to Doctors

by John J. Secondi, M.D.

Medicine, like every other field these days, is so overspecialized that even a card-carrying doctor like me has trouble telling who's who. The layman, I imagine, is almost helpless to distinguish the forest from the tree surgeons. I have noticed, however, that my colleagues have a tendency to run to type. So, in an effort to clear up the confusion, I have compiled a little list so simple that the most naive patient can spot at a glance which doctor is which.

The General Practitioner: These gentlemen used to be the ones you saw most often, when you lived back in Nebraska and watched the cars go by from your front porch for entertainment. Now they are nearly extinct, like the buffalo and the stork, although there are a few left in a reserve in Iowa. Most of them looked like a cross between Charlie Ruggles and Colonel Sanders; they were warm, wonderful, and always had time for you, even if they slept only three hours a night. They knew you inside and out from the moment they delivered you until their ink dried on your death certificate, and they were always there to help you push your car out of the mud. If anybody knows where there's one of these left, please drop me a note. I could use a good doctor myself.

The Internist: This is a general practitioner with more diplomas on the walls and without house calls. (He also has money in the bank.) By the age of thirty at the latest he becomes obese, sallow, and emphysematous. Usually bald, he is always found sitting and smoking a pipe. (The pipe is a deliberate attempt to evoke the Delphic Oracle, which also simmered and steamed with ideas. The internist is nothing if not oracular.) As opposed to the surgeon, who carries no equipment at all except the keys to his Rolls-Royce, the internist can be seen with a stethoscope protruding from one of thousands of pockets in his clothing. Really big stethoscopes are worn to give the impression of expertise in heart disease.

In his desk the internist stocks lifetime supplies of sample drugs; when you are in his office he may pick one or two at random and give them to you with alarming liberality. But don't worry; he won't let you know what they are. The internist is really happy only when deciding how to cope with some chronic incurable disease, preferably in a case some colleague has botched. The longer the name of the disease, the happier he is; and if it's in Latin he's ecstatic. An internist is required by law to have his phone ring twice an hour at least while he is at home, and he can never vacation. No internist's children ever become doctors.

The General Surgeon: These are the prima donnas of the trade. Today's surgeon is descended from the barbers of the Middle Ages, but washes more often. He may be fat or slim, but he is always loud, noticed, and in a hurry. He dashes dramatically in and out of rooms (whether patient, operating, or bath) and never lets you finish a sentence. To probing questions he nods wisely, smiles enigmatically, and runs off. (Never say "Now cut that out" to a surgeon.) He generally visits patients cloaked in green from head to toe to give the impression of being fresh from an operation, when probably (unless he is over fifty) he has been idling in his office all day waiting for someone--anyone--to call. After he does a surgical scrub, he raises his arms, which drip from the elbows. This posture serves both as a gesture to God for the usual assistance, and as a method to keep the bacteria flowing away from the surgeon--towards the patient.

Surgeons are taught early to rip off bandages as quickly as possible, pulling as much hair as they can get out with one clean tear. They have a distinctive jargon: For instance, they speak of healing by "primary intention" (which is to make lots of money), or by "secondary intention" (which means the wound got infected). If anything goes wrong during operations, surgeons are unanimous in blaming it on the anesthesiologists. Surgeons are the only doctors left who haven't cut out smoking, because they are confident they can cut out the cancer. If this description still doesn't make a surgeon flash in your mind, recall James Coburn in **Candy**. Absolutely accurate.

The Gastroenterologist: Gastrointestinal doctors, or "GI men," have had oral fixations since childhood. This means they are always talking a mile a minute, and at mealtimes they ingest like Electroluxes. They're usually roly-poly, literary, and very pleasant to gossip with, as a consequence. The unsavoriness of their work is grossly exaggerated; nevertheless, they do receive a lot of cologne for Christmas. As kids they were the ones whose parents always had to bang on the bathroom door to get them out. If Alexander Woollcott had become a doctor, he would surely have been a gastroenterologist.

The Obstetrician-Gynecologist: The real wise guy in medicine. Sitting on their high stools day after day with their patients in that absurd saddle, these comedians see the funny side of life. They have to have a good sense of humor because otherwise they would be so nauseated by some of the things that come along they would swear off sex forever. Always ready with a wisecrack or a foul story (depending on whether you are a patient or another doctor), they are universally popular, except with pediatricians. Child doctors blame every childhood disease from thumb-sucking to Mongoloid idiocy on the anesthesia the obstetrician used. It is not true that all obstetrics is done at three o'clock in the morning. I personally recall one case in 1968 that was done at six in the morning, and others may have had similar experiences. Many Ob-Gyn men are now getting crash courses in abortion, which was never part of the medical curriculum before. These are the ones with the sterile coathangers.

The Urologist: Urologists do for men what gynecologists do for women--more or less. They are drawn to their specialty irresistibly by its identifaction with the masses of tight curly hair they all have. Many urologists are now growing beards and mutton-chops so you can spot them more easily than ever. Walking around weighted down by their waterproof rubber aprons and all those whiskers they resemble Noah before the flood. At home they putter around a lot with the kitchen sink to keep in practice. Like other plumbers they work good hours and make a good living.

The Anesthesiologist: Anesthesiology is the Tower of Babel of Medicine. There are a

total of four English-speaking anesthesiologists in America: two on the East Coast, one in Chicago, and the other in L.A. All the other communicate with frenzied nasal accents or sign language. They are short, shy, retiring types who hide behind the sterile barrier during surgery and squeeze contentedly on their little black respiration bags. You will recall the bags from 1930's movies because when Lionel Barrymore came too late they quit moving and you knew the patient had died.

The night before your next surgery an anesthesiologist may mince into your room, unheralded and uninvited. He will never show up after five o'clock, however. Without bothering to identify himself or even to ask for an interpreter, he will quiz you on all allergies you may have. This is done to choose exactly the right toxin to put you to sleep with the next day; for God's sake, don't forget anything that might be relevant. Then he will bow graciously and back out of the room, and you'll never see him again. (Whether you'll see anyone else again is another question.) If you wake up from surgery, you may have a sore throat, even after an abdominal operation. This complication occurs because the anesthesiologist routinely puts the rubber airway down your esophagus six times before he hits the right hole. Anesthesiologists fear surgeons the way helpless children fear angry fathers. They are very sensitive and feel left-out enough, so be kind to them.

The Pediatrician: All pedi-pods, as they are called on the wards, act and look like Peter Pan. They wear saddle-shoes and bow ties, have cherubic faces, and wear crew cuts or pageboys, depending on whether they are over thirty. They are shorter than most other doctors, although they can be told from anesthesiologists because pediatricians are slightly taller, speak English, and have horizontally placed eyes. They never use words longer than two syllables or sentences of more than four words. Generally they sound as if they are doing Jonathan Winters imitations. Many have a lilting gait, and a few skip during clinic. About the age of forty they lose patience with all those frantic mothers and either commit suicide, go in research, or start child labor camps.

The Orthopedist: All bone doctors without exception are former college jocks or team managers; i.e., they are big brutes or mousy types who wish they were. They all wear white athletic socks. (This is the one infallible rule of medicine and mkes it a snap to recognize an orthopedist.) They usually have plaster of paris splattered on their clumsy-looking shoes.

The Ophthalmologist: (This is the real "eye doctor" and is not to be confused with optometrists or opticians, who aren't M.D.'s at all.) Ophthalmologists, despite being constantly misspelled and mispronounced, are the happiest men in medicine. They work laughably few hours, make extravagant fees, and are adored by their patients, who understandably value their sight above all else. Thus ophthalmologists are always well-tanned and talk knowingly of Tahiti and the Riviera. They also play a great deal of golf. Curiously, they are uniformly tall, slim, and vaguely ethereal. A good example would be Pope Pius XII with a suntan. They use a jargon so technical and so infinitesimally detailed they cannot even make small-talk over drinks with other doctors.

The Otolaryngologist: When you've been to an ear, nose and throat man you'll never forget it. These are the true sadists in medicine. Children despise them; they're the only doctors who make you feel worse than when you came in. What with the nausea produced by cocaine sprayed in the nose, and all those tiny little probes poking God-knows-where back in your sinuses, and all that blood swallowed after a tonsillectomy, going to an ENT man is like being used for an experiment by Edgar Allen Poe. The only common physical characteristic by which these gentlemen can be spotted is that they still have their own tonsils.

The Plastic Surgeon: Immediately identifiable. They all wear handtailored clothing of vast expense and have sculptured features worthy of a Phidias or a Michelangelo. Gorgeous from every angle, they look years younger than they are, and boy do they know it. They were the big face men of college fraternities, the ones who were put strategically at the front door during rush week and in the first row in the yearbook picture. They are very rich because there are a lot of jealous women who will pay anything to look as good as the plastic surgeon. They have a tendency to get very snotty when you ask them what kind of plastic they're going to put in, and lecture you on the origin of the word "plastikos" in the traditions of Greek sculpture. Nevertheless, they have terrific guilt complexes about spending all their time on frivolous surgery, so they occasionally take on a burn victim to soothe their consciences. The patron saint of plastic surgery is Narcissus.

The Psychiatrist: Spotting a Psychiatrist on the street is easy enough, but as he wanders on the wards of a state hospital he may need a nametag. Psychiatrists either avert their eyes from you or stare right through you, whichever makes you more uncomfortable. If they sense you're going to ask a question, they slip on in first. They never use complete sentences, only clauses and long words. I know a psychiatrist who begins every sentence with the word "that" and ends it with an exact quotation of Plato. The main object a shrink has in mind when he sees a patient is not to rescue the patient's sanity but to prove his. After all, how many surgeons do you know who have five years of operations of themselves before they can practice?

Today's psychiatric resident may have elbow-length hair, wear rings in one ear, and go to work in purple satin capes. This kind of psychiatrist has not hit Park Avenue yet, but it's only a matter of time. Incidentally, they reason there are so many Jewish psychiatrists is that they are basically yentas with M.D.'s.

The Radiologist: Radiologists hide in dark places and never come out, like other rodents. They make creepy-crawly gestures and rub their noses frequently. Their world is one of shadows and they detest the light of day. They hold up in lendened tunnels and, though they tell you that X-rays are harmless, they generally have their offspring as early as possible. (By the time they reach fifty irradiation has given their skin the texture of refried beans). Like Whistler, they view everyone as a study in black, white and gray. The thought of being responsible for a live human being is abhorrent to them. Yet they give off smiles of delicious perverse pleasure as they make patients swallow thick white slime and poke around in their bowels so their guts will show on film. Peter Lorre would have played a perfect radiologist.

I would like to complete the list, but I just got a frantic phone call from A.M.A. headquarters, and I have to run. Something about an emergency protest march against socialized medicine.

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An Approach to the Differential Diagnosis of Arthritis

by Tom F. Disney, M.D.

In arthritis, as in most diseases, the difficulty of diagnosis can vary from those cases in which it is at once self-evident to those in which even careful observation over long periods may still leave doubts. This depends on the characteristic features of the various types of arthritis (acute, subacute, and chronic), which may be present. In the subsequent paragraphs the differential diagnosis of arthritis and disorders causing similar complaints as seen in daily practice will be overviewed.

The late Dr. Kahler Hench of the Mayo Clinic, suggested a number of axioms which helped in the rapid differential diagnosis of arthritis. Through this paper, these axioms will appear in abbreviated Tables.

Arthritis of acute onset, as with all forms of arthritis, includes numerous possibilities-however, in most instances the differentiation can be made easily if a careful history, physical examination and a few select laboratory studies and x-rays are performed.

Pyogenic Arthritis: Usually develops in one or two joints and is preceded or associated with fever, general malaise, and general arthralgias and myalgias. Depending on the joint involved, there may be acute pain, swelling and redness. Sometimes a limp in children is all that is observed in hip involvement. Menstruating or post-partum women are especially prone to develop gonococcal arthritis. The definitive diagnostic feature is the demonstration of the causative microorganism in the joint fluid, either in direct smear or by culture.

Acute Gouty Arthritis: The definitive diagnostic feature of acute gouty arthritis is the characteristic urate crystals in the synovial fluid. Highly suggestive is the typical red, indurated extremely painful swelling of only one or two joints and a dramatic response to Colchicine. A high serum urate level provides supporting evidence, but is not conclusive per say, especially if only moderately elevated, because some non-gouty individuals have hyperuricemia. Approximately 20 per cent to 40 per cent of patients with acute gout have normal uric acid at the time of the acute attack. Moreover most patients with painful joints have taken Aspirin before they consult a physician. Since small doses of Aspirin can cause hyperuricemia, many patients without gout have increased serum urate levels when first seen.

Pseudogout: Attacks simulating gout in middle-aged or elderly patients with normal serum urates, suggests pseudogout. Typically, these do not respond to Colchicine. Synovial fluid aspiration for crystal identification, typically reveals purple appearing, positively birefringent calcium pyrophosphate crystals. The presence of chondrocalcinosis in the involved join or in other common sites is highly suggestive of pseudogout.

Reiter's Disease: The arthritis in this disease is commonly acute in onset. Involvement of the lower extremity joints is typical. The clinical factors of urethritis, ocular inflammation and mucocutaneous lesions (such as keratodermia blenorrhagica, painless lesions on the roof of the mouth, and balanitis circinata) along with arthritis make up the classic tetrad for certain diagnosis. Careful microbiologic culture of urethral discharge and joint aspirate is essential.

Rheumatoid Arthritis: This usually begins insidiously or subacutely but acute onsets are by no means rare. Laboratory and x-ray analysis usually give little diagnostic help early in the illness except for an elevated sedimentation rate. The diagnosis is tentative pending exclusion of other causes and until a minimum 3-6 weeks has passed.

Spondyloarthritis: Typically idiopathic ankylosing spondylitis, the arthritis is associated with inflammatory bowel disease, psoriatic arthritis, and Reiter's Disease, which have other clinical features for diagnosis, may present with acute peripheral arthritis. Occasionally, however, sudden severe pain in a knee or large joint may occur before symptoms appear referable to the back, skin, and other system involvement. Typically in the arthritis of inflammatory bowel disease (chronic ulcerative colitis or Crohn's Disease) peripheral arthritis is asymmetric and coincides with the increased activity of the bowel problem. Like psoriasis, rarely the arthritis may ante date the onset of the inflammatory bowel disease.

Psoriatic Arthritis: In a minority of cases, may precede the onset of psoriatic skin lesions. Like the other forms of spondyloarthritis, initially the arthritis is characterized by the absence of rheumatoid factor on analysis. Usually in psoriatic arthritis the distal interphalangeal joints are involved and always the accompanying psoriatic nail changes exist.

Arthritis Associated With Viral Infections: Rubella or after immunization against rubella may be associated with an acute arthritis. This is usually less acute, however, and transient in its course as well as following a relationship of a recent viral infection or immunization. Occasionally a peripheral arthritis may follow chickenpox, mumps, or Coxsackie. Preceding arthritis for the onset of jaundice is not uncommon for infectious hepatitis. Normal liver function tests, as well as contact with hepatitis are useful clues for this diagnosis.

Erythema Nodosum: Arthritis, sometimes acute in onset, occurs in 60 percent-75 percent of patients. Because the arthritis symptoms often precede the cutaneous lesions, the initial diagnosis may be difficult. These lesions are tender, indurated, erythematous and of variable size, appearing on the shins. The presence of erythema nodosum demands careful search for underlying explanations including recent streptococcal infection, sarcoidosis, inflammatory bowel disease, turberculosis or drug reaction (including oral contraceptives). Arthritis is typically confined to the lower extremities.

Systemic Lupus Erythematosus: This form of joint disease often begins acutely-preceded by arthralgias in the typical case. Other features of multisystem disease such as dermatitis (butterfly rash), nephritis (hematuria, proteinuria) and laboratory abnormalities (positive Anti-nuclear Antibody Test, hematologic aberrations) must also be present.

Rheumatic Fever: Although less common now, this still exists and is characterised by an acute migratory arthritis associated classically with carditis and erythema marginatum in a young person. In the absence of these features, fever coupled with a migratory polyarthritis is very suggestive of the diagnosis. Evidence of carditis is often

lacking. E.C.G. signs of pericarditis or prolonged PR interval may be present, but their absence is of no diagnostic significance. A rising antistreptolysin O titre indicates a recent hemolytic streptococcal infection, and does not necessarily mean rheumatic fever. Conversely, a persistently normal titre of ASO, especially if tests for other streptococcal antibodies also remain normal, is strong evidence against the diagnosis of rheumatic fever. It must be remembered that an elevated erythrocyte sedimentation rate merely indicates inflammation and is not otherwise diagnostic. A dramatic disappearance of pain, swelling and erythema following full doses of Aspirin also points to rheumatic fever, although some cases of acute rheumatoid arthritis can also show initial response.

Arthritis associated with periodic illnesses may sometimes be acute. These disorders include palindromic rheumatism, intermittent hydrarthrosis, and the arthritis accompanying Familial Mediterannean Fever. The specific label to apply depends on the special features of the individual illnesses.

Other less common causes of acute arthritis which are often seen more commonly in children include leukemia, Sickle Cell Disease and hemophilia.

Axiom No. 1

Arthritis of Acute Onset Suspect:

Pyogenic Arthritis
Gouty Arthritis
Pseudogout
Reiter's Disease
Rheumatoid Arthritis
Spondyloarthritis
Systemic Lupus Erythematosus
Palindromic Rheumatism
Leukemia
Foreign Protein Reaction

Acute Monoarticular Arthritis: Any form may be monoarticular at onset.

Mechanical Injury: These cases may be acute and subacute episodes closely following an injury. Sometimes the injury is so minor that it goes unnoticed. In the absence of known direct trauma, diagnosis may be made only be exclusion and will require the course of the disease be followed for weeks or months. Xanthrochromic or bloody synovial fluid aids diagnosis in the early stages. Laboratory examination of the joint fluid usually shows a low white count and normal viscosity. Erythrocyte sedimentation rate is low or normal. X-ray may reveal a hairline fracture or no abnormalities. Retrogram may be required in recurrent and persistent cases to detect evidence of a torn meniscus. An arthroscopic examination may eventually be required if the symptoms persist despite a normal arthrogram.

Gout and Pseudogout Are a common cause of acute arthritis and are distinguished from other forms by the history, age of onset, and duration of present and previous attacks. Definitive diagnostic features were cited earlier.

Pyogenic Arthritis associated with instrumentation or previous surgery is typically due to staphylococcal microorganisms. It should be remembered that these organisms are commonly responsible for septic arthritis in rheumatoid arthritic patients who have not had previous instrumentation or surgery. All Gram positive and Gram negative organisms may give rise to pyogenic arthritis. Joint fluid analysis with staining and culture are essential diagnostic features.

Tuberculous Arthritis: Although this form of arthritis is no longer common, it must be kept in mind as a cause of subacute and chronic monoarticular cases. Tubercle bacilli are rarely identified by direct smear of the joint fluid but the culture may be diagnostic although its growth may not be positive for several weeks. A synovial membrane needle biopsy is diagnostic. When in doubt, an open biopsy, with appropriate direction for microbiologic culture and histologic study, is in order.

Osteoarthritis: Secondary to mechanical or inflammatory injury, osteoarthritis is a common cause of chronic monoarticular disease. Swelling of a bony type, x-ray evidence of cartilage narrowing, and bony spurring are characteristic. Erythrocyte sedimentation rate is normal. A synovial effusion may occur secondary to synovitis. Involvement of the distal interphalangeal joint, proximal interphalangeal joints and carpometacarpal joints of the thumb, knee and hip are common sites of monoarticular arthritis due to osteoarthritis. Pain is frequently referred to the knee if there is involvement of the hip.

Avascular Necrosis: This may be seen to occur following prolonged administration of large doses of corticosteroids, a fracture of the neck of the femur, and Sickle Cell Disease. The head of the femur is the most common site where the disease gives rise to a slowly increasing pain in the hip often with radiation to the knee and progressive limitation of motion. Diagnosis is made by characteristic changes on x-ray.

Malignant tumors: Malignant tumors arising from the joint or adjacent structures may be mistaken for arthritis. Definitive diagnosis requires open biopsy.

Axiom No. 2

In the presence of Monoarticular Arthritis suspect:

1. Osteoarthritis
2. Rheumatoid Arthritis
3. Infectious Arthritis
4. Pigmented Villonodular Synovitis, Synovioma.

Axiom No. 3

Re: Chronic Arthritis:

Anatomic distribution:

1. Distal I.P. fingerjoints
(a) Heberden's Nodes (1)*, female hereditary
(b) Baseball fingers (2) *,
(c) Psoriatic Arthritis

2. Distal I.P. thumbjoint
(a) Rheumatoid arthritis

3. Distal I.P. toejoint
(a) Psoriatic Arthritis

1. M.C.P. Joint
(a) Rheumatoid arthritis
(b) Arthritis of hemochromatosis
(c) Osteoarthritis

2. Carpo-M.C.P. Joint-thumb
(a) Osteoarthritis

3. M.T.P. Joint
(a) Rheumatoid Arthritis
(b) Rheumatoid variants (spondyloarthritidies)

Subacute or Chronic Arthritis of Multiple Joints:

Patients with arthritis of this type present very common diagnostic problems. Most cases are due to rheumatoid arthritis, systemic lupus erythematosus, subacute gouty arthritis, psoriatic arthritis, Reiter's Disease, osteoarthritis, bowel arthritis or sarcoidosis.

Rheumatoid Arthritis: This disorder is the most common cause of subacute or chronic arthritis. Symmetrical involvement is characteristic but the condition may begin asymmetrically. Involvement of the proximal interphalangeal and metacarpal phalangeal joints is suggestive. Initially, x-rays reveal soft tissue swelling and extra-articular osteoporosis and with more advanced disease, evidence of cartilage narrowing and bony erosions. Laboratory studies reveal an elevated sedimentation rate and often a positive test for the presence of Rheumatoid factors. Characteristics of cutaneous nodules may be found on the extensor surfaces of the forearms just distal to the olecranon processes.

Systemic Lupus Erythematosus: Preceding arthralgia and arthritis are common presenting signs of the multisystem immunologic illness, systemic lupus erythematosus. The presence of a skin rash, renal involvement and a positive anti-nuclear antibody test are among the common features. The anti-nuclear antibody test must be positive to make this diagnosis.

Subsacute or Chronic Gouty Arthritis: Untreated acute gouty arthritis may evolve into a subacute or chronic form of arthritis involving multiple joints. There is a preceding history of recurring acute attacks, with time associated with the presence of tophi and often renal impairment. An elevated serum uric acid helps to support the diagnosis. This is

confirmed by the finding of uric crystals in the synovial fluid.

Spondyloarthritis: Ankylosing spondylitis, psoriatic arthritis, arthritis associated with inflammatory bowel disease and Reiter's Disease may be associated with a subacute or chronic arthritis. Other features including skin problem, symptomatic bowel disease, genito-urinary tract symptoms or eye complaints are helpful distinguishing features. Heel pain and involvement of lower extremity joints are common features.

Osteoarthritis: Although osteoarthritis secondary to an old injury or other articular abnormalities characteristically affects only one or two joints, primary osteoarthritis involves multiple joints, notably the distal interphalangeal joints of the fingers (Heberden's Nodes) and the carpometacarpal joints of the thumbs. When these are frequently involved, about 20 per cent of patients with Heberden's Node also have involvement of the proximal interphalangeal joints. X-ray examination reveals typical changes of bony enlargement, joint space narrowing and, occasionally, effusions. Sarcoidosis may present as a subacute or chronic form of arthritis, it is typically associated with cutaneous and pulmonary lesions.

Neurogenic Arthropathy: A so-called Charcot's joint was formerly seen as a result of Tabes Dorsalis. Now this condition is seen more commonly caused by syringeomyelia and diabetic neuropathy. It is distinguished by its painless course, associated disorder, and the x-ray picture of articular destruction.

Non-articular Rheumatic Syndromes: A large number of patients may present with painful joints without associated features of arthritis, i.e.: swelling, erythema, and redness. Arthralgias are often associated with symptoms of aching muscles or myalgias. Commoner conditions include fibrositis, psychogenic rheumatism, polymyalgia rheumatica and neuropathis.

Fibrositis is a general term used to refer to inflammation of the soft tissues or fibrous tissues, characterized by stiffness in the muscles and joints in the morning on arising. If such symptoms are seen in patients with a systemic rheumatic disease such as rheumatoid arthritis, they are referred to as secondary fibrositic symptoms. Primary fibrositis is the term applied to these symptoms in the absence of underlying disease and is typically seen to occur in young women, often with painful trigger areas in the soft tissues and accompanied by a normal sedimentation rate.

Psychogenic Rheumatism is a term often used to apply to patients whose symptoms and signs do not support organic disease. Typically, their complaints are varied, associated with lypochondriasis and anxiety. Typically these patients have found no relief from the use of salicylates or other commonly prescribed non-steroidal anti-inflammatory agents.

Polymyalgia Rheumatica: This is a disorder of unknown cause. It may be associated with giant cell arteritis. Typically, the syndrome occurs in elderly patients and is associated with proximal shoulder and pelvic girdle muscle pain and severe disability. Constitutional complaints including weight loss and fever are common. Marked elevation of sedimentation rate and non-specific elevation of alpha-2-globulins and protein electrophoresis are seen. Pain is dramatically relieved by low-dose corticosteroids.

Neuropathies encountered in various entrapment disorders (such as the carpal tunnel syndrome) and in diabetes mellitus usually are readily diagnosed by the neurogenic character of the complaint. The connective dissue disorders other than rheumatoid arthritis and systemic lupus erythematosus that may be associated with arthritis include scleroderma, polymyositis and dermatomyositis and Sjogren's Syndrome. Typical features of these illnesses including laboratory abnormalities are required for diagnosis.

Juvenile Chronic Polyarthritis: Chronic Polyarthritis in childhood, defined by the persistence of non-infectious arthritis for six weeks to three months or longer, has been found to occur with a variety of syndromes of juvenile rheumatoid arthritis (J.R.A.) systemic lupus erythematosus (S.L.E.), dermatomyositis, progressive systemic sclerosis, mixed connective tissue disease, chronic ulcerative colitis, Crohn's Disease, psoriatic arthritis, polyarteritis nodosa and Behcet's Syndrome.

Juvenile rheumatoid arthritis or Still's Disease has several subtypes. There are pauciarticular, systemic, and polyarticular J.R.A. The polyarticular group is further subdivided into seropositive (those with positive tests for rheumatoid factors) and seronegative polyarticular J.R.A. The criteria for these subdivisions rests primarily on the number of joints (less than four or more than four) involved during either the first six months or the first year of disease. Daily intermittent fever with temperature rise to 39 degrees centigrade, is required in addition for the diagnosis of systemic J.R.A.

Conclusion

The differential diagnoses of arthritis requires a logical approach which is dependent upon a careful history and physical examination. Appropriate use of routine laboratory tests, joint fluid analysis, and x-rays are often necessary for diagnosis. It is important to distinguish arthralgias from arthritis. Remember that all that is painful near a joint is not necessarily due to arthritis.

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Hypertension: An Over View

by J.P. Cain, M.D., F.R.C.P.

Hypertension is the most common chronic disease encountered in a physician's office and yet our diagnosis and treatment leaves much to be desired. Although research has characterized several forms of hypertension, we still lack a clear understanding of its pathogenesis. For the clinician, several questions need answering when he sees a patient. (i) Does the patient have hypertension? ie. detection. (ii) Is there a correctable cause? ie. secondary hypertension. (iii) If there is no correctable cause, how should the patient be treated?

Definition

It is difficult to arrive at a working definition of who is hypertensive. One of the fallacies of medicine is that there is a clear division between normotension and hypertension. Since hypertension usually causes few symptoms, it must be defined in terms of it's effects on mortality and serious morbidity.

There is little doubt that patients with an elevated arterial blood pressure die prematurely. The causes of death being cardiovascular (coronary artery disease and congestive heart failure), cerebrovascular and renal. In general, the higher the blood pressure the worse the prognosis, the lower the blood pressure, the better the prognosis. Life expectancy tables (table I) demonstrate that even a slight rise in blood pressure is associated with a decrease in survival. In a 35 year old male, a rise in blood pressure from 120/80 mm.Hg. to 140/90 mm.Hg. results in a mean decrease in life expectancy of 9 years (22%). Yet in clinical practice, few would consider a blood pressure of 140/90 mm.Hg. as being significant hypertension. The problem of definition is also clouded by the fact that there is no evidence that treating fixed diastolic blood pressure under 105 mm.Hg. results in reduced morbidity or mortality. In the end, the difinition must be arbitrary and is based on that point on the life expectancy curves where there is a sharp decline in survival. Most now accept that hypertension is a blood pressure greater than 140/90 mm.Hg. in those under 55 years and 160/100 mm.Hg. in those over age 56.

Coexisting Risk Factors

Given a fixed level of hypertension certain coexisting factors alter a patient's response to the blood pressure elevation, ie. life expectancy is either increased or decreased (Table II). Black patients have a higher prevalence of hypertension (27% vs. 14%) and they also have increased morbidity and mortality from the disease. The mortality rate from hypertension in black men is 66 per 100,000 while in white men it is 16 per 100,000 (2). After correcting for the higher prevalence of hypertension in the black population the mortality risk in black patients with hypertension is approximately twice that of similarly matched white patients. Similarly, unfavourable prognostic signs include male sex, fixed vs. labile hypertension, diabetes mellitus, hyperlipidemia (particularly elevated cholesterol), family history of hypertension and clinical or laboratory signs of end organ failure (cerebrovascular, heart or kidney) (3-7). Recently, Laragh and associates have reported that plasma renin activity (PRA) is an important prognostic sign in patients with hypertension (8). Subsequent reports, however, have failed to confirm their preliminary observations (9).

Therefore, the definition of hypertension must be modified to take into account these other factors. This is particularly important both in the initial hypertensive investigation and treatment.

Detection and Diagnosis

The technical details of blood pressure measurement frequently leads to misdiagnosis. A proper cuff to fit the patient's arm is essential, ie. large cuff for large arm, small cuff for small arm (11). In addition, some confusion exists as to whether diastolic blood pressure is best approximated by the 4th or 5th Korotkoff sound. The American Heart Association recommends that the 5th is slow to disappear, then the 4th (point of muffling) should be used for estimating diastolic blood pressure (12-14). Causes for misdiagnosis of blood pressure other than wrong cuff size include aortic valve prosthesis, ausculatory gap, wide pulse pressure and the non-compressible brachial artery syndrome (15, 16).

Several studies have shown that blood pressure varies widely during the day (increasing with fear, anger, physical activity and coitus, and falling with sleep) (17). These variations occur in both normotensive and hypertensive individuals. As a result, blood pressure measurements obtained in the office may not be reflective of the mean daily blood pressure. Fortunately, in clinical practice, if care is taken to reassure the patient and have him rest for several minutes, office blood pressure determinations are reproducable from day to day. However, several determinations over a few weeks should be done before diagnosing a patient as having hypertension.

The hypertensive patients seen in the physician's office are only the tip of the iceberg. Many patients will only be diagnosed through community screening programs (11). For these screening programs, sitting blood pressure determinations are adequate. In addition to these detection methods, every adult (over age 16 years) attending a physician should have yearly blood pressure determinations. For those between the age of 10 and 16 years, blood pressure should be determined every 2 years and some pediatricians now are recommending regular blood pressure determinations for those below 10 years (18).

Using screening methods, it has now been found that the prevalence of hypertension varies between 10 and 15%. In addition, evidence is accumulating that essential hypertension starts as labile hypertension usually before age 30 and gradually develops into fixed diastolic hypertension in the 5th and 6th decades.

Clinical Evaluation

The evaluation of hypertension has two phases, (1) to assess the degree of target organ damage and coexisting risk factors and (2) to determine if a secondary or curable cause for the hypertension is present (Table III).

In addition to a complete history and physical examination, patients with hypertension should have a chest x-ray, an electrocardiogram, creatinine clearance, urinalysis and a fasting serum glucose determination. Considerable debate exists as to what further diagnostic tests should be done to exclude secondary causes of hypertension. We recommend as a routine in young patients, serum electrolyte determination on a high salt diet, an intravenous pyelogram and a 24 hour urine

determination of 17 hydroxycorticosteroids, vanillymandelic acic (VMA) and total catecholamines. Many clinicians do not perform the latter three tests but the clinical presentation of a patient with pheochromocytoma or Cushing's syndrome is frequently so atypical that they are warranted. Other diagnostic tests should only be performed if there are specific clinical indications.

Essential hypertension is a diagnosis by exclusion and today accounts for 95% of patients with hypertension. Investigations in the last decade now show this to be far from a homogeneous group but rather heterogeneous when classified according to cardiac out-put, blood volume, plasma renin activity etc. However, despite these studies, the pathogenesis and etiology of essential hypertension has eluded investigators.

TABLE I

LIFE EXPECTANCY IN RELATION TO BLOOD PRESSURE*

Age 35 (Male)	Life Expectancy (Years)	Reduction in Life Expectancy (Years)
Normal (diastolic 80 mm. Hg. systolic 120 mm. Hg.	42	-
130/90 mm. Hg.	38	4
140/95 mm. Hg.	33	9
150/100 mm. Hg.	25	17
Age 45 (Male)		
Normal (diastolic 80 mm. Hg. systolic 120 mm. Hg.	32	-
130/90 mm. Hg.	29	3
140/95 mm. Hg.	26	6
150/100 mm. Hg.	21	11

*** Statistical Bureau, Metropolitan Life Insurance Company**

TABLE II

FACTORS AFFECTING LIFE EXPECTANCY IN HYPERTENSION

Factor	Good Prognosis	Bad Prognosis
Race	White	Black
Sex	Female	Male
Lability	Lability	Fixed
Carbohydrate Intolerance	Normal Glucose Tolerance	Abnormal Glucose Tolerance (Diabetes Mellitus)
Lipid Abnormalities	Normal	Elevated Cholesterol
Age of Onset	Old	Young
Family History	No History	Strong Family History with Premature Deaths
Target Organ Damage	No Damage	Cardiac Hypertrophy, Renal Failure, Generalized Atherosclerosis

TABLE III

LABORATORY EVALUATION OF HYPERTENSIVE PATIENT

Routine: Chest x-ray
Electrocardiogram
Fasting cholesterol and triglycerides
Fasting serum glucose
Creatinine clearance
Serum electrolytes
Urinalysis
Intravenous pyelogram
24 hour urinary hydroxycorticoid excretion*
24 hour urinary catecholamine, vanillymandelic acid or metanephrine*

Specialized: Plasma renin activity
Plasma and urinary aldosterone
Renal arteriogram
Renal venous sampling for PRA
Split renal function tests
Immunological testing

* some clinicians would not routinely do these tests.

TABLE IV *

SUGGESTED REGIMENS FOR UNCONTROLLED HYPERTENSION

	Pretreatment Diastolic Blood Pressure ** (mm. Hg.)		
	> 115 mm. Hg.	116 - 129 mm. Hg.	Over 130 mm. Hg.
Initial	Diuretic	Thiazide Diuretic and Methyldopa	Thiazide Diuretic, Methyldopa and Guanethidine
Supplementary #1	Methyldopa or	Guanethidine	Hydralazine
Supplementary #2	Hydralazine	Hydralazine	Propranolol *
Supplementary #3	Guanethidine or Propranolol *	Propranolol *	

* Modified from Gifford (24)

** Parenteral Therapy with Nitroprusside or Diazoxide to reduce Blood Pressure promptly may be needed initially.

TABLE V *

Symptoms or conditions unrelated to Hypertensive Cardiovascular Disease that may influence the choice of Antihypertensive Agents

Symptom or Condition	Drugs that may Aggravate the Symptom or Condition
Depression	Rauwolfia Compounds
Palpitations	Hydralazine
Tension or Migraine Headaches	Hydralazine
Diarrhea	Guanethidine Rauwolfia Compounds
Postural Dizziness	Guanethidine Ganglion-blocking Agents
Hepatic Dysfunction	Methyldopa

TABLE VI

SUGGESTED DRUGS FOR COMPLICATED HYPERTENSION

Complication	Preferred Drugs	Druges to be used with Extra Caution when Necessary
Congestive Heart Failure	Thiazide Diuretic Methyldopa Guanethidine Spironolactone	Hydralazine Propranolol
Azotemia (Serum Creatinine > 3.0/ 100 ml)	Furosemide Methyldopa Hydralazine Propranolol	All other diuretics, especially Distal Tubular Diuretics (Spironolactone) Guanethidine
Cerebrovascular Insufficiency	Thiazide Diuretic Methyldopa Hydralazine Propranolol	Guanethidine
Coronary Insufficiency	Thiazide Diuretic Methyldopa Propranolol	Hydralazine (unless pretreated with Propranolol Guanethidine

Secondary Causes of Hypertension

1. **Renal**

Parenchymal renal causes of hypertension are not uncommon in young patients, particularly in those with a short history. Usually, examination of the urinary sediment plus a serum creatinine and/or creatinine clearance and intravenous pyelogram indicates the diagnosis. Polycystic renal disease is usually diagnosed by clinical history, urinalysis and intravenous pyelogram.

2. **Renovascular**

In renal artery stenosis, about 85 per cent of cases can be detected by a hypertensive intravenous pyelogram (small kidney or delayed nephrogram). However, a specific diagnosis depends upon demonstrating a stenosed renal artery by arteriogram. In addition, the plasma renin activity (PRA) is elevated on a high salt diet. Of value in predicting success of surgical correction is the demonstration, by bilateral renal venous sampling, that the level of PRA from the stenosed kidney is at least 1.5 times that of the uninvolved side (19). Recently, the Saralasin test has been used to demonstrate those patients who will respond to surgical correction (20). Saralasin (1-sar-8-ala angiotensin II) results in a lowering of blood pressure when given to patients with renal artery stenosis. Most reports indicate that surgical correction of an isolated stenotic renal artery results in amelioration or cure of the hypertension in 75 per cent of cases, provided there was a positive Saralasin test and/or significantly different renal vein PRA levels (19, 20).

3. **Primary aldosteronism**

This is a rare condition and for practical purposes if there is no hypokalemia on a high sodium diet the diagnosis may be dismissed. Salient diagnostic features include hypokalemia, kaluresis, low PRA and high plasma and urinary aldosterone levels (21). The tumour is best localized by either iodocholesterol scanning or venography. Amelioration of hypertension with high dose spironolactone therapy is supportive evidence that adrenalectomy will be successful in restoring the blood pressure to normal.

4. **Pheochromocytoma**

Although the classical clinical features of this disorder are diagnostic, most cases are atypical and are diagnosed at autopsy or fortuitously during surgery or obstetrical delivery. Today there is little indication to do diagnostic tests such as phentolamine (Rogitine) as they are hazardous. The diagnosis depends on demonstrating elevated urinary catecholamines, vanillylmandelic acid (VMA) or metanephrines. Attempts at invasive radiographic localization of these tumours may cause a hypertensive crisis, so, they should be performed with care or not at all. The operative mortality has greatly been reduced in these patients with the advent of pre-operative blockade with phenoxybenzamine (14 days) and propranolol to control arrhythmias. Pheochromocytomas may occur in family clusters and be associated with hyperparathyroidism and medullary carcinoma of the thyroid (Sipple's Syndrome).

5. **Oral Contraceptives**

This cause is one of the most frequently encountered in clinical practice. It is associated with an elevated plasma renin activity level and serum angiotensin level. Treatment involves use of alternate forms of contraception and careful monitoring of hypertension. It may take several months for the biochemical effects and the blood pressure will remain elevated and these probably are cases of essential hypertension.

There are numerous other causes of hypertension that need to be evaluated, including coarctation of the aorta, Cushing's syndrome, hypercalcemia, licorice ingestion and hypothyroidism. These however are much less frequently encountered than those mentioned above.

Treatment of Essential Hypertension

In assessing treatment, three questions need to be answered.

1. Does lowering blood pressure reduce morbidity and mortality?

2. What kind of drugs should be used?

3. How successful are we in managing essential hypertension?

There has always been evidence that treatment of severe or malignant hypertension that presented with renal failure, toxemia of pregnancy, stroke or acute pulmonary edema was associated with decreased morbidity and mortality. The Veterans Administration Trial has demonstrated that control of diastolic blood pressure between 105 and 129 mm. Hg. results in fewer cerebrovascular deaths (9). However, deaths due to coronary artery disease, although reduced, were not significantly different between the treated and untreated patients. In addition, there was no demonstrable benefit in controlling blood pressure between 90 and 104 mm. Hg. Nevertheless, these negative findings should not be viewed as indicating that therapy is without value. The study had a short follow-up (5 years) and many of the patients had had uncontrolled hypertension for years prior to the study. Long term studies are now under way to determine if early control of hypertension in the labile phase will result in further reduction in mortality, especially in those with diastolic blood pressures between 90 and 104 mm. Hg. Until these results are available the choice must be made between (1) the risks of antihypertensive therapy, and (2) the risks of hypertension. In those with diastolic blood pressure readings over 105 mm. Hg. the answer is clear that treatment is indicated. In patients with blood pressures below this but still hypertensive by our definition, therapy is empirical, although most feel it is indicated. We therefore recommend therapy for patients under age 30 with diastolic blood pressure over 90 mm. Hg. and those over age 30 with diastolic blood pressure greater than 95 mm. Hg.

Before discussing the specifics of hypertensive therapy, a few general remarks are in order. In most patients, hypertensive therapy is not an emergency but rather should be instituted gradually

over weeks and months. Young patients with labile hypertension are more likely to respond to beta-adrenergic blockades while the elderly have a more favourable response to mineralocorticoid blockade with spironolactone. This latter group are also most likely to have low PRA while the former have high PRA. In patients with unspecified essential hypertension it is of value to classify them into therapeutic groups according to their initial blood pressure readings (Table IV).

In diastolic hypertension with readings under 115 mm. Hg., the initial treatment would be thiazide diuretic and if control is not achieved in 6 weeks then the addition of alpha methyldopa up to maximum doses. If control is still not achieved then consider substituting either hydralazine plus propranolol or guanethidine for methyldopa.

An alternative drug to alpha methyldopa might be clonidine. In Table IV, similar schedules for treatment of more severe forms of blood pressure are outlined.

Of major importance in the therapy of hypertension is a thorough knowledge of the side effects of each drug. This is particularly important in young patients who are usually asymptomatic prior to therapy. A common problem in young male patients treated with sympatholytic agents is impotence. It is for this reason that if blood pressure is not easily controlled by diuretic and/or low doses of alpha methyldopa, many clinicians prefer to treat these patients with a combination of hydralazine plus propranolol. (22) Alpha methyldopa frequently produces transient somnolence. If this side-effect persists, it may be reduced by giving the total dosage at bedtime. Other therapeutic precautions are given in Tables VI and VII.

The final question which must be asked is "How effective are we in managing hypertension?"

Regrettably, the answer is that our efforts fall far short of what is needed. Several large studies have demonstrated that from 40 to 60 per cent of hypertensive patients detected randomly are unaware that they are hypertensive (11, 23). Of the hypertensive patients found in these surveys, about 30 per cent are on medications and of these only half or about 15 per cent of the total hypertensive population are well controlled. If in the future we are to better control this disease we need: 1. More screening programs to detect the hypertensive population. 2. More physician education as to the importance of therapy, particularly in the young hypertensive patient. 3. More simplified drug regimens with fewer side effects in order to achieve better patient compliance.

Finally, a cure of essential hypertension will depend on further elucidation of it's pathogenesis. At times it appears that all of the research in the past two decades has told us much about hypertension but has not helped solve its mysteries.

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Book Review:
Nolen continues his fine writing

by Steve Lundy

(Nolen, William A. **Surgeon Under the Knife.** Dell Publishing Co. Ltd., New York, N.Y., 1976)

William Nolen is a general surgeon who not only has a busy practice, but also finds time to write books on subjects interesting to physicians and the general public. He has written books on a variety of topics including a rather exhaustive look at faith-healing and its more famous practitioners, and a humorous and compelling book on his residency days in surgery at Bellevue Hospital in New York City. Nolen's latest book, "Surgeon Under the Knife", is about atherosclerotic heart disease. The book is particularly pertinent because Nolen is describing a disease which he has. Thus we get not only a doctor's look at coronary heart disease but a patient's view as well. Dr. Nolen traces the condition from the day he first had an attack of angina several years ago to where he is today - a course which involved exhaustive tests, angiography, and a double coronary bypass. In tracing the course, Nolen delineates the risk factors behind atherosclerosis, what angina signifies, the restrictions coronary heart disease places on your life, and the prognosis for someone with the disease. He takes us through the anatomy of the heart, the surgical procedures for angiography and coronary bypasses, and the post-operative follow-up.

If this was all the book had to offer, then it would probably serve no useful function except as a primer for people with coronary heart disease. However, the book can be useful for students and doctors in two ways. First, it reveals the emotional impact and trauma for someone confronted with the reality of having a double coronary bypass, let alone someone with severe atherosclerotic disease, not knowing if he will survive until operation day. Secondly, the book points out some common and not so common blunders that doctors make in dealing with their patients.

Since coronary heart disease is one of the curses which our civilization seems to be suffering from in ever-increasing numbers, anything which helps us come to grips with the problem is probably helpful. Dr. Nolen's book is worth reading just for this reason. The book is easy to read but will not hold you in rapt attention. It is entertaining but certainly far from titillating or suspenseful.

Book Review:
Selye book dis-"stressing"

by Steve Lundy

Selye, Hans. **The Stress of My Life** McClelland and Stewart Ltd., Toronto, 1977.

The name Hans Selye is synonymous with the word "stress". As one of Canada's most well known scientists, he has gained world-wide acclaim for his work on stress. From some of his earlier books such as "The Story of the General Adaption Syndrome" to more recent ones such as "Stress Without Distress", Dr. Selye has attempted to explain his theories on stress to scientific colleagues and the public. "The Stress of My Life" is Selye's latest work. In it, he traces his life from his birth in Vienna seventy years ago, to his present position as Director of the Institute of Experimental Medicine and Surgery at the University of Montreal.

The book is not easy reading and in fact not particularly absorbing. However, it does give a lot of insight into the character and driving force behind Dr. Selye. Selye comes across as a totally committed scientist, in fact almost perversely committed. His leisure time, holidays and weekends are spent in the institute. His numerous travels around the world to give lectures have no room in them for sightseeing. In his own words,

> What is unique in this schedule is that I never relax by sightseeing. I plan to attend whatever conference is set up, often going directly from one city to the next in one day.

Selye goes on to say that even as a medical student during vacations at home, he used to get up between 5:00 and 6:00 in the morning and study all day in the garden, with only brief interruptions for exercise and eating until supper-time. He states that even now, to conserve his time, he has taken on the job of being his own barber.

To say that Mr. Selye is a man "driven" is an understatement. His work is his life, but he would not have it any other way. He quotes George Bernard Shaw's words, "Labour is doing what we must; leisure is doing what we like." Accordingly, Selye's life is one of leisure.

Selye comes across in the book as a man likely to be hard to get along with. Exactly, totally dedicated, and a workhorse - Selye expects the same from his workers. There is certain imperiousness about the man that is hard to like. Consider the following excerpt from the book.

> When I want solitude I lock myself in my office, disconnect

the telephone and switch on a red light placed on my door at eye level above a sign that says 'Please do not Disturb' . . . If the red light is not turned on, staff members are encouraged to enter my office without knocking. After entering, the employee whispers his name. If he needs to speak with me, he waits until I respond. (p. 182)

One need not like a scientist to respect his work, and Selye does not make himself very likeable in this book. He comes across as a creature of habit, and a rather smug man, secure in his knowledge and erudition. His much-acclaimed code of behaviour for man, based on the idea of "altruistic egoism", is presented as if it is the answer to the world's woes. However, this theory, of "earn thy neighbour's love . . . by being necessary and useful to (your) fellow-man" (p. 124), does not seem to differ much from the Christian adage of "Love thy neighbour as thyself", an adage that has been around for hundreds of years.

The book is good in some respects. It demonstrates to the non-scientist how advances in science are made, not by leaps and bounds but by "grinding", slow work. The book is also devoted very much to explaining Selye's theories on stress, and although Selye might himself not be popular, his work on stress is very illuminating. "The Stress of My Life" can best be described as interesting, not fascinating, and certainly not entertaining.

Being a Medical Student

by D. Zochodne

What is it about the medical profession that continually makes its most recent newcomer, the medical student, into a subcomponent of a concept instead of an individual. To simplify--consider the ideas of a self classified knowledgeable cashier in an ordinary retail outlet-

"Oh my! I know all about you Med students with your stethoscopes and cadavres."
The confused subject of such immediate insight could respond in a variety of ways-
#1 "Oh my! Is that right? I know all about you cashiers with your customers and change drawers."
#2 "Do you? Wait. I'm doing a survey of behaviour patterns found among Medical students. Your in-depth analyses would add incredibly to the findings of this study."
Or a personal favourite:
#3 "Would you be interested in learning more?"
There are no secrets in the personality profiles of Med students:
"You do things to cadavres"
"You and all those nurses heh, heh. I hate to tell you this brother, but you've got it made. You never had it so good"
"All your diseases"
"You're all a bunch of conceited....." (expletive deleted)

Barring discussion on the accuracy of such insight, one wonders what provokes such strong personal opinion on the medical profession. Not to understand why can hardly be considered an intelligent personal achievement. The answer slaps you in the face as readily as does someone who was less liberal than you thought. Not to 'know' about those who tear out vast chunks of your gut and rearrange it to their liking is like placing your innards in the winds of fate. Similarly how could one justify perfect strangers probing into the most personal of personal areas. Thus the classification is understandable. If it did not exist the physician would regularly receive a slap in the face rather than a check from O.H.I.P.

Lectures Vs. Tapes

A current concept in medical education is the use of taped lectures in place of 'live entertainment'. The exact mechanisms by which these disgusting processes work are as follows.

The incomparable wisdom of medical professors is converted into magnetic energy to be stored on spindle-shaped devices for future reconversion into wisdom. Of course, if some of this wisdom was incorrectly reassembled the difference to the confused student may not be immediately obvious. The main problem here is that unlike the Enterprise's transporter, magnetic tapes fail to portray all those factors that make the acquisition of knowledge tolerable. Among those factors are included;
#1 the ability to belittle professors with rudeness and sarcasm
#2 the ability to be late
#3 the ability to encourage emotional outbursts in professors
#4 the ability to miss vast segments of lectures without being able to rewind them

In fact, the use of taped vs. live lectures can be totally inhumane to students. I suggest that studies be done on the impact of concentrated bursts of pure knowledge on the brain. It is my belief that group classes (live lectures) in place of individual torture (taped lectures), are very important foundations of the sociological structure of the Meds class. Communal learning serves to sort out those various elements of medical classes i.e. including social climbers, beautiful people, anarchists, paranoid people and sheep. How can you dislike people with sufficient evidence to support your prejudices? How can you be a snob to people you do not know? How can you be better than people who do not know you? In what better way can one practice wit and humour but by the lectures of people who have to cringe before vast numbers of medical students. In summary, if I may put forth a slice of personal philosophy, taped lectures could have the unfortunate result of converting medical students into black boxes with a given input and expected output rather than the more lovable uncontrollable heathens that we are and enjoy being.

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