CHAPTER 3

INTERFERENCE FIELDS

General considerations

An interference field is a local tissue irritation with the potential to cause destabilization of the autonomic nervous system (ANS) (or dysautonomia) either locally or systemically. The discovery of interference fields in 1940 and recognition of their therapeutic importance are credited to Ferdinand Huneke; he and his brother Walter are considered the founders of neural therapy.[1] This discovery, although serendipitous, was preceded by many years of experimentation by both brothers with the therapeutic use of procaine.

Interference fields can be found in almost any part of the body, and their location does not necessarily coincide with the location of the dysautonomia. A pathological reduction (usually) or increase (less often) in membrane resting potential leads to a reduced threshold of excitation within the affected tissue. The lower threshold creates chronic low-grade excitation, impaired intracellular metabolism and ion exchange, and persistent inability to maintain a normal resting potential. This is a situation of chronic neurophysiological instability.

Abnormal membrane resting potentials and resultant changes in skin temperature can be measured easily. In contrast to the resting potential, which is usually lower than normal at the site of an interference field, the skin temperature is usually higher than that of the surrounding skin (unpublished personal observations obtained with a hand-held thermal scanner [infrared type K thermometer, model 42525, Extech Instruments, Waltham, Massachusetts]).

The "signal" from an interference field may vary greatly in intensity. There may be no symptom at all, or there may be mild local itching or deep tenderness. Symptoms may develop locally, may spread to involve a region of the body or may surface in remote parts of the body. The viscera may be affected, not infrequently because of somatic dysfunction (called a somatovisceral reflex). At other times, visceral interference fields are the cause of unexplained muscle or other somatic pain and spasm (a viscerosomatic reflex).

Interference fields usually occur on the same side of the body as the symptoms. However, the symptoms and signs may be bilateral (see Plate 2) and sometimes even contralateral. At times, the pain will coincide with an acupuncture meridian (e.g., lateral leg pain from a gall bladder interference field), but more commonly it surfaces in a "Head zone"* (e.g., right upper shoulder pain from an interference field in the liver).

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*A specific area of the skin on which an organ's nervous excitation is projected; named for H. Head, a British physiologist.

Interference fields generally arise in locations where there has been an injury. The injury may be from sharp or blunt trauma, local infection or inflammation, or mechanical strain or injury. The type of interference field for which neural therapy is best known is that found in a surgical scar. However, interference fields occur in many other locations, including sites of somatic dysfunction, internal organs, teeth, autonomic ganglia, nerve entrapments, skin puncture sites, irritated ligaments and tendons (enthesitis), fractures (delayed or non-unions), periosteal contusions and possibly even intracranial structures.

Scars

Scars are the archetypal interference fields, the ones for which neural therapy is best known (see Plates 4 and 7 to 10). They are easily found, as the patient's history generally directs the physician to them. They are also usually easy to see and to treat. However, the size of the scar gives no indication of its importance: tiny laparoscopic scars and even invisible injection-site scars can cause greater disturbance than long thoracotomy scars. In fact, an interference field found in a long scar usually involves only part of the scar, in which case treatment can be focused on the involved section. The interference field part of the scar may be thicker, more erythematous and more tender than the rest of the scar, although deep palpation may be necessary to detect the tenderness. The area can often be identified more precisely by autonomic response testing (see Chapter 4).

Somatic dysfunction

Somatic dysfunction deserves special comment, partly because it is so common, but also because it is rarely mentioned in traditional neural therapy teaching. Somatic dysfunction is primarily a local mechanical disturbance that is of particular interest to physicians and others who use manipulative therapy. The term is similar in meaning to the chiropractic term *subluxation* and the European term *joint blockage*, but differs in that it includes an ANS component. This association of mechanical disturbance and other aspects of physiology has been at the core of osteopathy since its beginnings, but it was only in the 1940s that the neurophysiological basis of the association was discovered.[2] Somatic dysfunction was found to be a complex neurophysiological phenomenon involving skin, subcutaneous tissue, fascia, viscera, the spinal cord and higher levels of the nervous system.

These findings confirmed clinical osteopathic observations and helped to explain how a key somatic dysfunction could have profound effects on the health of the whole body. Although the osteopathic profession has generally not been aware of the concept of the interference field, it has been, in effect, diagnosing and treating interference fields throughout its history. In other words, a somatic dysfunction is simply one type of interference field.

Organ interference fields

Any organ can be an interference field. Usually, the patient describes recurring problems related to the organ, for example, recurrent pneumonia or pharyngitis. In other cases the relationship is subtler, e.g., depression and chemical sensitivities associated with an interference field of the liver. Alternatively, an organ interference field may trigger a viscerosomatic reflex, e.g., a gall bladder interference field producing interscapular muscle spasm and back pain. An organ interference field may also be suspected because of manifestations of illness along the organ's acupuncture meridian, e.g., blepharitis from a liver interference field (see Plate 12) or acne rosacea from a stomach interference field.

Neural therapy of the organs may be important not only to relieve symptoms related to the organ, but also to optimize excretion. Treatment of the liver, the kidneys and the gastrointestinal organs is frequently important in detoxification.

Teeth

The teeth are among the commonest of interference fields, but only rarely do they draw attention to themselves through local symptoms. Dental interference fields are generally silent locally but create problems in other parts of the body. The remote site where the problem occurs is usually related to the site of the dental interference field through an acupuncture meridian, and successful neural therapy requires knowledge of these meridians (a chart is provided in Appendix 1). Not all of these causative relationships follow the acupuncture meridians, however, and it is necessary to routinely examine the teeth in any search for interference fields.

Interference fields develop in the teeth for many reasons. These structures are vulnerable to injury and decay and also to electromagnetic and toxic stresses imposed by prosthetic dentistry. These combined stresses lead to very complex pathophysiologies, which are discussed in more detail in Chapter 7.

Local areas of inflammation

Interference fields develop wherever there is inflammation or the potential for inflammation. This phenomenon has clinical application at sites of mechanical irritation. For example, nerve entrapments can be assumed to represent interference fields and can be treated accordingly with procaine injections. In many cases, cortisone is not necessary. Nerve root entrapment by disk sequestration is more than a simple mechanical event,[3] and procaine alone has been used effectively in epidural injections for almost 50 years.[4]

The suffix -*itis* implies inflammation and tends to be used indiscriminately whenever pain and tenderness are present in tendons (tendonitis) and bursae (bursitis). However, in many cases there is no other evidence of inflammation, and it is probably more accurate to say that an interference field is present. In any case, infiltration with procaine is often adequate for treatment.

Development of interference fields

Interference fields develop in different ways. Although injury of some sort is usually a part of the history, there is often a complicating factor, which may occur either during the infliction of the injury or during the healing phase. For example, in the case of trauma, there might have been a delay in healing or an infection might have developed in the wound. In the case of an organ interference field, infection might have constituted the original injury that led to the interference field. In this regard, it is of interest that areas of the body that heal exceptionally well, (e.g., the scalp and perineum) are rarely hosts of interference fields, and that penetrating wounds (e.g., resulting from arthroscopic surgery) are more likely than superficial ones (e.g., a burn) to become the sites of interference fields.

If the injury has emotional connotations or occurs during an emotional period in the patient's life, an interference field is more likely to develop. A scar resulting from cancer surgery (e.g., mastectomy) is more likely to be associated with an interference field than one resulting from elective surgery (e.g., breast reduction). Similarly, an injury sustained during an assault tends to have more repercussions than one received while playing sports or while relaxed and happy.

The emotional aspect of interference fields may be significant in both diagnosis and treatment. Patients with chronic pain from interference fields typically show an obsessive quality in their pain behaviors. It is as if they feel that they cannot convince the physician that the problem is real and they must therefore repeat the story over and over. These patients are often considered neurotic because of this behavior and because their problems are difficult to diagnose within a conventional medical paradigm. Yet this pattern, once recognized and understood, can be of help both in making the diagnosis and in gaining the patient's confidence.

During treatment of interference fields, emotional issues may come to the surface, sometimes suddenly. It is not rare for a patient to break into tears during or immediately after a treatment. At other times, the response to treatment will be disappointing until the unresolved emotions are confronted and dealt with (see Chapter 11).

Offbalances

As mentioned above, the electrophysiological properties of interference fields differ from those of the surrounding tissues in one direction or the other. In other words, the electrical potential and/or the temperature may be lower or higher than the surrounding "normal tissue". From a cybernetic point of view, these findings signify a failure of the regulatory mechanisms that maintain homeostasis.

Revici has pointed out that homeostasis is never really a constant state, but rather manifests as a controlled oscillation within a certain range.[5] Each "swing" of the oscillation is driven by alternating and opposing forces. From Revici's standpoint, these forces are heterotropic or homotropic, building structure upward to a higher level of complexity (thus requiring energy) or breaking structure down to a lower level (thereby releasing energy), respectively. He also used the terms "anabolic" and "catabolic" and went on to demonstrate experimentally that all substances in nature and all chemical and biological processes are either anabolic or catabolic.[6]

When a homeostatic system is pushed beyond its tolerance, it decompensates in either the anabolic or the catabolic direction. Physiological processes at that level fail, and other (deeper) defense mechanisms come into play. This situation is called an "offbalance". If the organism is unable to summon the resources to restore the offbalance to normal, the offbalance may "flip" to the opposite offbalance, and a chronic offbalance situation may develop.

Using studies of wound healing, radiation injury and cancer, Revici showed that numerous biochemical and physiological processes take part in these offbalances. He was particularly interested in the opposing functions of fatty acids and sterols and recognized the important role of "abnormal" fatty acids in all pathological processes[7] many decades before the discovery of series 1 and series 2 prostaglandins and other potent eicosanoids.

Pischinger, in his studies of blood changes associated with interference fields, discovered that various parameters, including pH, leukocyte counts, immunoglobulins and oxygen saturation, could deviate in either direction from normal in the venous blood of the body quadrant harboring the interference field.[8] He, like Revici, also recognized the role of triple-conjugated unsaturated fatty acids in pathophysiology and developed a simple technique of measuring them using uptake of iodine (iodometry).

The osteopathic profession has long known that somatic dysfunction in its acute form is qualitatively different from its chronic form. In the acute state the overlying skin is warm and swollen, (See Plates 14, 15 and 16). whereas in the chronic state it is cool and has a dead, lifeless texture.[9] These ANS reactions correspond exactly with the offbalances proposed by Revici.

Autonomic ganglia

General considerations

Knowledge of the anatomy and physiology of the autonomic ganglia is critical to understanding the pathophysiology of local dysautonomia. When the local interference field becomes active enough, it spreads, and the autonomic ganglia are almost always involved in this dissemination process. The sympathetic ganglia are the most important, but not just because they contain the final synapses of the sympathetic efferent pathways and distribute efferent information to multiple postganglionic fibers. The ganglia are also way stations for afferent information transmitted through unmyelinated C fibers. Some fibers simply pass through, continuing to higher levels; others synapse in the ganglia and affect the efferent pathways. Because afferent fibers synapse in the ganglia and affect efferent outflow, it may be said that "decisions" are made at this level. The ganglia therefore act as outposts of the nervous system, making at least some decisions about regulation of local conditions.

Autonomic ganglia can themselves become interference fields. It is not entirely clear how this happens, as the ganglia are rarely subject to direct trauma. Usually they become interference fields in association with local disturbances in the regions that they serve. For example, the third lumbar (L3) sympathetic ganglion is involved in regulation of autonomic control of the ipsilateral low back and leg. Under certain circumstances, an injury or injuries to the low back or leg (or both) creates an exaggerated autonomic response through the L3 sympathetic ganglion. The injuries do not have to be severe and may be of various types: laceration, contusion, sprain, puncture wound, etc. Occasionally an L3 ganglion is involved if an interference field develops in the surgical scar resulting from lumbar surgery. The patient may experience a hard-to-describe pain, often with a "glove and stocking" distribution, changes in skin temperature, vague feelings of weakness, or a sense of loss of control over the limb.

Presumably the interference field develops because of abnormal positive feedback loops involving afferent C fibers and sympathetic postganglionic efferent fibers. Clinically it seems that the ganglia are reacting to afferent overload, as the intensity and duration of pain appear to be contributing factors (pain that is more intense and lasts for longer being more likely to lead to an interference field than slight pain that dissipates quickly). However, other mechanisms have been proposed as well. It has been suggested that the ganglia may become "toxic", and thus sensitized, because of retrograde migration of toxins from the tissues that they serve. For example, the sphenopalatine ganglia are commonly affected in individuals with large numbers of amalgam-filled teeth; presumably the high concentrations of mercury in the periodontal tissues affect the ganglia. A similar situation may occur in the celiac plexus, where an interference field may develop after chronic intestinal infections.

A detailed anatomic description of ganglionic connections is beyond the scope of this book. Nonetheless, some knowledge of their function and their likely role in ANS disturbance is needed, particularly in the search for interference fields. The following sections describe ganglia that may harbor interference fields and their potential manifestations.

Retrobulbar (ciliary) ganglia

The retrobulbar ganglia are involved in both sympathetic and parasympathetic functions of the eyes. Interference fields may develop as a result of any trauma to the eye or even blunt trauma to the face. They should be considered in all cases of facial pain, headache or eye disturbance, including dysfunction of the pupils, lacrimal glands or ducts, and corneal or scleral inflammation.

Sphenopalatine ganglia

The sphenopalatine ganglia are among the most common of ganglia to harbor interference fields. They send autonomic fibers to the upper teeth, the facial sinuses, the nose, the eye, the inner ear, and the soft tissues of the cheeks including the skin. They have important projections into the limbic system of the brain. Their frequent involvement in ANS dysfunction reflects the pathophysiology of the tissues that they serve. The sphenopalatine ganglia should be considered as sites of interference fields in the presence of prosthetic dentistry of the upper jaw, recurring infection of the maxillary and other facial sinuses, allergic rhinitis and sinusitis, and after blunt trauma or surgery to the upper jaw or face.

Sphenopalatine interference fields should be suspected in any case of dental or facial pain or headache, including trigeminal neuralgia. They may be contributing factors to cavitations (neuralgia-induced cavitational osteonecrosis lesions). Until proven otherwise, pain in the upper teeth with no detectable dental problem should be considered attributable to sphenopalatine interference fields. Temporomandibular joint syndrome, nasal congestion and eustachian tube dysfunction may also be causally related.

The importance of the ganglia in regulating circulation of the tissues can be well illustrated in treatment of these ganglia. It is not unusual to find interference fields in the sphenopalatine ganglia of patients undergoing detoxification of mercury from dental amalgam. Such patients are commonly given dimercapto-propanyl-sulfate (DMPS) intravenously, with subsequent monitoring of mercury in the urine. If the intravenous injection is given *in conjunction* with a neural therapy injection of the ganglia, it is not unusual to see a dramatic surge in mercury excretion.

The sphenopalatine ganglia may also be associated with pain or other dysfunction in remote areas of the body. Interference fields in these ganglia should be part of the differential diagnosis for recalcitrant shoulder problems and even low back pain. Bizarre pain syndromes affecting the whole body or one side of the body are not infrequently found to be caused by sphenopalatine ganglion interference fields.

Case report: A woman with longstanding whole-body pain

A 56-year-old woman reported "whole-body" pain (from the neck down) of 7 years' duration. The pain had begun suddenly while she was sitting at the dinner table during a holiday. The pain worsened when she was sitting or lying down and was so intense that for the first few days she spent most of her time floating in the swimming pool. Numerous medical investigations revealed no cause, but injection of her left sphenopalatine ganglion gave immediate relief. Repeat injections over a few months resulted in a permanent cure.

The connection of the sphenopalatine ganglion with the limbic system may explain the emotional overlay that is often found in interference fields of these ganglia, especially in cases of facial pain. However, it may be difficult to determine whether the emotional distress is primary or secondary to the sphenopalatine ganglion interference field.

Submandibular ganglia

An interference field in a submandibular ganglion should be suspected in any case of unexplained dental pain of the lower jaw. Occasionally the interference field is associated with submandibular or salivary gland problems. Interference fields in this ganglion are usually caused by trauma or infection, either external or related to dental procedures.

Otic and gasserian ganglia

Each otic ganglion lies just inferior to the oval foramen, the exit point from the skull of the mandibular nerve (the third branch of the trigeminal nerve). It provides autonomic control of the parotid gland. The corresponding gasserian ganglion is situated intracranially and is sensory (not autonomic) in function, supplying sensory innervation of the face. The mandibular nerve provides motor fibers to the jaw-closing muscles and sensory fibers to the inferior alveolar nerve. All three structures (the otic and gasserian ganglia and the mandibular nerve) are very close together at this point and can be treated with a single neural therapy injection.

An interference field of one of these structures should be considered not only in trigeminal neuralgia but also in facial pain and headache of other presentations. There are often associated interference fields in the teeth and the sphenopalatine ganglia.

Superior cervical ganglia

Each superior cervical ganglion lies just behind the tonsil (or tonsillar fossa) and is the cephalad terminus of the paravertebral sympathetic chain. Interference fields of this ganglion should be considered in patients with headache, recurrent pharyngitis, facial or neck pain, and many other medical and pain syndromes. Like the sphenopalatine ganglia, the superior cervical ganglia are associated with conditions found almost anywhere in the body. Treatment of asthma and allergic disorders through neural therapy of this ganglion has been particularly effective in some hands.[10]

Injection of the superior cervical ganglion through the tonsillar fossa is technically straightforward but is not without risk (because at this point the ganglion lies very close to the vagus nerve and the internal carotid artery). Fortunately, injection of the tonsil or tonsillar fossa seems to be as effective in most cases as injection of the ganglion itself.

Stellate (middle and inferior cervical) ganglia

The middle and inferior cervical ganglia lie anterior to the transverse processes of the lower cervical vertebrae on each side. There is considerable anatomic variation among patients, and in many cases there is confluence of the lower ganglia with the first thoracic (T1) ganglion. This grouping is called the stellate ganglion. It is the largest and one of the most important ANS structures outside of the central nervous system and provides autonomic innervation to the whole upper quadrant of the body. This concentration of ANS structures results from the fact that all sympathetic nerves to the neck and head issue from the thoracic vertebrae and must pass through the cervical chain.

The stellate ganglia are well known for their role in reflex sympathetic dystrophy of the upper extremities. Less recognized is their role in many other conditions involving the thorax, neck and head. For example, the right stellate ganglion is involved in controlling coronary artery tone and can be injected as treatment for angina. Such treatment should also be considered for cardiac arrhythmia. The diffuse neck and upper back pain of the whiplash syndrome responds in some cases to neural therapy of the appropriate stellate ganglion. This type of therapy should be considered in any case of headache or neck pain as well as conditions affecting circulation of blood or lymph, the lungs, eyes, ears, nose, throat or thyroid.

Lower thoracic (T5–T12) sympathetic ganglia

The T10–T12 sympathetic ganglia send postganglionic fibers to the small and large bowel, kidneys, ureters and gonadal tissues. Slightly above, the T5–T9 sympathetic ganglia innervate the liver, stomach, pancreas and spleen. Interference fields in this part of the sympathetic chain usually develop in conjunction with stress on one or more of these intra-abdominal organs. It is not necessary to identify precisely which level of the chain is affected. This is fortunate, as only the lowest of these ganglia can be reached by the injecting needle. In other words, procaine injections of the sympathetic ganglia at the T10 level seem to be effective in treating interference fields at the T5 to T9 levels. (See “Injection of Left / Right Lower Thoracic Sympathetic Ganglion”, in Appendix 3.)

These ganglia (especially those on the right side) are sometimes involved in toxic processes in which more than one of the upper abdominal organs are affected, e.g., liver and kidneys in mercury toxicity. Patients who are taking multiple medications are at risk for similar reasons. Occasionally the lower chest wall (especially on the right side) can be affected by pain, swelling and hyperesthesia. Treatment of an interference field of these ganglia can have powerful effects on the patient’s health and vitality.

Celiac ganglion and plexus

The celiac plexus is a control center for the gastrointestinal tract which lies just anterior to the aorta, at a level midway between the xiphisternum and the umbilicus. Interference fields of this structure are usually associated with gastrointestinal dysfunction but (like all interference fields) can cause trouble almost anywhere in the body. An interference field in this plexus should be considered in a patient who has had an acute gastrointestinal illness and has never entirely recovered. Neural therapy by injection (with an anterior approach) is surprisingly simple and safe.

Lumbar (L1–L3) sympathetic ganglia

Interference fields in the lumbar sympathetic ganglia are most commonly associated with leg or low back pain. The leg pain usually has a "glove and stocking" distribution and is vague in quality; it is sometimes associated with numbness and subjective (and objective) changes in temperature. The possibility of an interference field in these ganglia should *always* be considered after failure of back surgery or (even better) before such surgery.

Pelvic plexus

The diffuse pelvic plexus lies extraperitoneally in the loose connective tissue surrounding the pelvic organs, bladder and lower bowel. In the German literature and the Dosch neural therapy atlas[11] it is called the "Frankenhaeuser plexus". Interference fields here are common and are associated with a wide variety of pelvic problems including pelvic pain, dysmenorrhea, menorrhagia, loss of libido, sexual dysfunction, infertility, chronic prostatitis, urinary frequency, urgency, incontinence, proctalgia and other lower bowel symptoms. Pelvic plexus interference fields may also contribute to low back pain, leg pain and other musculoskeletal disorders of the lower extremities.

Interference fields are usually found to have resulted from some sort of intrapelvic injury (often a medical procedure) or infection. Emotional trauma may be partly or wholly responsible. External trauma to the pelvic ring may also be a cause, e.g., from motor vehicle accidents or falls.

Presacral and precoccygeal ganglia

The presacral and precoccygeal ganglia lie just anterior to the sacrum and coccyx. They are involved in autonomic control of the organs of the pelvis (including the genitalia), and the pelvic floor. The precoccygeal ganglion is the most common site of interference fields within this group, likely because it is the most vulnerable to direct and indirect trauma. There is often a history of coccygeal fracture. An interference field should be considered in pain of any kind affecting the pelvic floor (including the anus), the low back and the anterior thighs. An interference field is sometimes found in association with painful rectal problems such as fissures and hemorrhoids.

Identification of interference fields

Interference fields are common. Estimates of the incidence in unselected patient populations range from 30%[12] to 100%.[13] These figures probably depend to a certain extent on how the term *interference field* is defined. For example, the classical German literature does not seem to incorporate the concept of somatic dysfunction in a direct way and therefore probably underestimates the actual incidence.

Finding interference fields is a form of detective work. In some cases they are obvious, but in others they are elusive and considerable "digging" may be needed. This requires persistence, intuition and a certain confidence that the interference fields can eventually be found. The rewards of success are great, however. Not only does the patient benefit (since almost all interference fields are treatable), but there is also a most satisfying intellectual pleasure in solving a difficult puzzle.

The value of intuition in this area cannot be overestimated. If intuition is a primitive nonspecific apprehension of the environment, then almost certainly the ANS is involved. From a phylogenetic standpoint, nonspecific sensation of the environment developed *before* the special senses. Recent research in scalar energetics has shown that biological rhythms (especially those regulated by the ANS) can be transmitted to and perceived by another individual without skin contact.[14] This may be a model of how intuition can be used to identify local disturbances of ANS function in a patient.

Interference fields may be hidden under what are called layers of adaptation. This is a familiar concept in osteopathic medicine, whereby the body adapts to mechanical disadvantages. For example, secondary scoliosis may develop to compensate for a short leg, allowing the body to maintain its center of gravity in an efficient location and also keeping the eyes and vestibular organs level. However, the price paid is some loss of reserve in spinal mechanical function. Therefore it is more difficult for the person to compensate for an injury, and other strategies must be developed for the body to remain upright and function efficiently. If a second injury occurs, further adaptation is needed—an adaptation to the adaptation. Osteopathic physicians who deal with body mechanics are familiar with these principles and often speak of the patient "working through" layers of compensation as they undergo treatment. The patient will sometimes experience the pain of a very old injury as the more recent one is relieved.

Similar principles are at work in other areas of body physiology. The dysautonomia from an interference field in an abdominal scar may cause enough dysfunction in the stomach that the stomach also becomes an interference field. The dysautonomia resulting from the interference field of an infected tooth may impair circulation to a maxillary sinus, making it more vulnerable to infection, and the sinus also becomes an interference field.

Nothing is more important in the search for interference fields than a good understanding of the anatomy and physiology of the ANS. Of all the characteristics of the ANS, three stand out in this regard.

1. The ANS regulates and coordinates the body's resources on a moment-to-moment basis. It prioritizes the flow of blood to the tissues that need it the most. Acute demands always trump chronic ones.
2. With local injury or infection, the ANS modulates (increases or decreases) blood flow to that part as appropriate. The component of the ANS responsible for the modulation is in an alarm state. The initial response to most injuries or infections is an increase in blood flow, which brings the necessary cellular and humoral materials for repair and reconstruction. However, if the local injury or infection threatens the whole organism, blood flow to that part will be restricted. In other words, the organism will sacrifice a part of itself to preserve its existence.

3. Alarm states sometimes persist beyond the duration of the threat to the organism. They may linger subclinically as a body memory or clinically as a dysautonomia with chronic pain or dysfunction. An alarm state persisting beyond the body's physiological requirements is the essence of the nature of an interference field.

There are three general methods of finding interference fields: by history, by physical examination and by autonomic response testing.

By history

A careful history is the classical method, and sometimes the only method needed to find an interference field. There is generally a latent period of a few weeks to a few months between the injury that provoked the interference field and its manifestation. Therefore, in history-taking, the clinician must always ask, "What happened in the weeks or months before the pain (or other symptom) began?"

Sometimes the connection between the events is clear in the patient's mind. If sciatica develops a few weeks after successful lumbar disk surgery, the patient generally knows that it has something to do with the surgery. However, most surgeons do not know about interference fields and first suspect some complication of surgery or failure of technique. The patient is then subjected to repeat imaging and sometimes re-operation, when the most likely cause of the pain is an interference field in the surgical scar. Simple infiltration of dilute procaine into the scar may give immediate relief, which suggests the correct diagnosis.

Often the connection between injury and onset of a chronic condition is less clear, especially when there appears to be no logical connection between the two or when the symptom surfaces in a remote part of the body. An example might be facial pain developing a few weeks after vaccination into an arm, or bladder irritability beginning a month after a root canal procedure. A strong index of suspicion is necessary in these cases.

The following question should always arise in the physician's mind when a new symptom develops: "What is the cause?" or at least, "What precipitated this condition?" Questions like these are essential if science (and not just technology) is to be applied to clinical medicine.

High on the list of precipitating causes are surgical procedures and puncture wounds. Of course only a minority of surgical scars contain interference fields, but part of a good history is to ask about *all* surgical procedures in the patient's life. The chronology of all procedures and the relationship between the procedures and the onset of illnesses must be ascertained accurately. The patient should also be asked if there were any complications of the surgery—wound infection, delayed healing, hemorrhage, traumatic emotional events, etc. Nutritional deficiency at the time of the injury, especially of zinc, would increase the likelihood of an interference field.[15]

It is not clear why surgical wounds seem to have higher risk of interference fields than other wounds. Medication given at the same time as the procedure may have something to do with it. Speransky,[16] working with experimental models of epilepsy and neural dystrophies, discovered that morphine given during surgical procedures lowered the threshold for seizures and neural dystrophies even months later.

Puncture wounds also seem to have a predilection for causing interference fields. The indwelling epidural catheter during labor is a not-uncommon cause of an interference field in the lumbar spine. This possibility should be considered in any woman with chronic backache beginning after the birth of a child. Arthroscopic and laparoscopic scars seem to harbor more than their share of interference fields. Again, the symptom may surface in a remote area of the body (for example, a case of chronic shoulder pain was found to be caused by an interference field resulting from knee arthroscopy). Occasionally a laparoscopic wound lies directly on an important acupuncture site and is related to the activity of that meridian (for example, severe exacerbation of shoulder pain after shoulder arthroscopy was found to be connected with an interference field in the lung; the scar coincided with a lung acupuncture point just medial to the glenohumeral joint).

Emotional distress at the time of a surgical procedure puts the patient at risk of an interference field (see case report “A woman who underwent surgery while in mourning”).

Case report: A woman who underwent surgery while in mourning

A 56-year-old woman had years of abdominal pain and gastrointestinal distress after elective cholecystectomy. She had undergone surgery a few months after the death of her 20-year-old son in a car crash and was still in a state of mourning at the time of the surgery. Treatment of the interference field in this scar provoked a brief recurrence of the emotional pain of her loss, but lasting relief of the physical symptoms.

Certain chronic or recurrent symptoms may indicate an interference field in a specific organ. The symptoms might be what one would expect from the organ (e.g., “indigestion” from the stomach or urinary frequency from the bladder), but often there is a noticeable emotional component as well.

Certain emotions seem to “fit” with certain organs, e.g., “heartache” with the heart. This is recognized to a certain extent in Western culture, given that expressions like “venting one’s spleen” and “bilious temperament” are a part of our language and literature, and “anal-retentive” is a personality type defined in psychoanalysis. In Chinese medicine, this organ–emotion connection is a fundamental part of medical theory, and emotions are assigned to each organ. A Western physician, even if using no other part of Chinese medicine, will find these associations valuable as diagnostic tools in the search for interference fields.

The organ that most commonly demonstrates this principle is the liver, for which the associated emotions are anger and depression. The liver is a biochemical powerhouse, a processor of a wide variety of natural and synthetic chemicals and the most important organ of detoxification. However, its adaptability and reserve are being tested like never before by the sheer volume and variety of synthetic chemicals in the modern environment.

Modern medicine is aware of the principles of “toxic overload”. It advises careful monitoring of liver enzymes while taking certain drugs and has much experience in dealing with obvious liver toxicities such as alcohol abuse and acute acetaminophen overdose. What it appears to miss, however, are the subtler, subclinical signs of liver toxicity or stress, especially when the toxic exposures are chronic and seemingly low grade.

The first warning signs of liver toxicity are often depression, irritability and fatigue. In all cases of unexplained depression, a careful history of environmental exposure to toxins should be taken, with particular attention to factors affecting liver function (e.g., alcohol or prescription drug use, poor diet, history of hepatitis) Serum liver enzymes are usually within normal limits, but autonomic response testing (see Chapter 4) will generally indicate a liver interference field.

By physical examination

A neurological examination of the ANS is subtler than that of the central nervous system. In fact, the ANS is generally ignored in the standard neurological examination. The one exception is examination for a general dysautonomia or failure or excessive tone of the sympathetic or parasympathetic nervous system. Orthostatic hypotension or an anxiety state is the typical manifestation. These conditions are dealt with in the neurological literature and will not be discussed here.[17]

Physical examination for local dysautonomia can be rewarding, however. Understanding the importance of interference fields helps to raise the index of suspicion, and otherwise overlooked physical findings become more noticeable.

A good hunting ground is scars. The appearance of a well-healed, nontender scar is no guarantee that it does *not* harbor an interference field, but any abnormality in a scar should be looked upon with suspicion. Local thickening of a scar or keloid formation may be significant, as may any tenderness, superficial or deep. Abdominal surgical scars should be palpated into the deep layers, and relative tenderness along the scar noted. Some patients will be ticklish or experience a strange feeling of anxiety as an interference field is approached. This is particularly true of the umbilicus, which occasionally is an interference field (see Plate 13).

At the site of an interference field in a scar, the temperature may be higher (or occasionally lower) than that of the surrounding tissues. With practice, these temperature changes can be detected with the hands. An alternative method is to use a hand-held thermal scanner (infrared type K thermometer, model 42525, Extech Instruments, Waltham, Massachusetts). Temperature differences of at least 2 °C are usual. Galvanometers have also been used in experimental situations and have demonstrated that interference fields have lower (and sometimes higher) electric potentials than the surrounding tissues.[18]

Skin quality may change in the vicinity of the scar as well. The skin may be drier (or moister), and the subcutaneous tissues may have a fuller texture. The “skin rolling” technique[19] used in detecting somatic dysfunction is useful for bringing out this feature.

There are two areas of the body in which scars almost never exhibit interference fields: the scalp and the floor of the pelvis. Presumably the generous blood supply to these areas is a factor in optimizing healing and minimizing the possibility of interference fields. This general rule does not apply to the anus, where interference fields are quite common, usually a residual of hemorrhoids (past or present), surgery or anal fissures. The author has never found an interference field in an episiotomy scar.

Needle puncture sites may leave invisible scars. These scars may be suspected on the basis of history, e.g., symptoms beginning after upper arm vaccination or after femoral artery catheterization for angiography (see case report "An elderly man with edema"). No tenderness or other physical finding may be detectable, but autonomic response testing may confirm the existence of scars (see Chapter 4). It might seem counterintuitive that such tiny scars could provoke significant physiological responses, but this may be related to the "puncture phenomenon"[8] whereby the finer the needle, the longer lasting the effect.

Case report: An elderly man with edema

A 72-year-old man presented with bilateral dependent edema of 2 years' duration. It had begun shortly after coronary angiography to investigate an episode of chest pain. No coronary artery disease was found. In fact, no cardiac abnormality of any kind was identified, nor was there any evidence of kidney or liver disease. However, an interference field was found at the puncture site in the right inguinal femoral artery, which was treated with an injection of dilute procaine. Relief of the edema was the result.

Skin changes can reflect underlying dysautonomia of other types. An extreme example is the skin changes of reflex sympathetic dystrophy, but the same changes in subtler form are quite common in other limb pain syndromes. Changes in microcirculation are sometimes easily seen as pallor or hyperemia of the skin, not only in the limbs, but also in the face. If one cheek is redder than the other, a sphenopalatine ganglion interference field is likely. Darkness of the skin between the eyes, sometimes accompanied by pallor and/or coldness of the bridge of the nose usually means a dysautonomia emanating from the ethmoid or frontal sinuses. Chronic sinusitis is usually present, although radiography may not confirm this problem. Scleral injection may indicate a retrobulbar ganglion interference field.

The teeth are important potential loci of interference fields, which may have far-reaching effects in remote areas of the body. Seventy percent of interference fields are said to be in the head and neck, and the teeth directly or indirectly underlie the majority of them. Among interference fields of the teeth, 50% are found in the wisdom teeth or in the scars where wisdom teeth have been extracted. Ordinary physical examination does not reveal obvious dysautonomia, but any sign of dental infection or of prosthetic dentistry is a potential site. Mixed metals (e.g., metal crown near amalgam filling) are particular hazards, as electrogalvanic currents may develop. Endodontically treated teeth (root canal procedures) are also at risk, as they often harbor occult infection. Orthodontic appliances and dentures may occasionally create interference fields, but this seems (surprisingly) rare. Teeth are discussed in more detail in Chapter 7.

Most autonomic ganglia are found deep in the body and are not amenable to direct physical examination. One exception is the stellate ganglia, which can be palpated on the anterior aspects of the transverse processes of the fifth or sixth cervical vertebrae (C5 or C6). Such palpation should be performed in the context of all examinations of "whiplash injury" or pain syndromes involving the neck, arms or anterior chest. Another ganglion that can be palpated is the sphenopalatine ganglion, which can be reached by compression through the lateral pterygoid muscle. An interference field may be suspected if there is tenderness over the ganglion.

Somatic dysfunction may be the commonest manifestation of interference fields, although, as mentioned earlier, it is not reckoned as such in traditional neural therapy teaching. It may be detected by ANS changes in the overlying skin, but the more common method is to look for disturbed mechanics. Not all disturbed mechanics represent somatic dysfunction, so some knowledge is needed to know the difference. This large topic is beyond the scope of this book, but in the simplest terms, the passive range of motion of a musculoskeletal body part (e.g., a joint) is impaired in one or more but not all directions. For physicians who lack manual skills, the assistance of a colleague or physiotherapist is helpful in dealing with this aspect of ANS disturbance. Somatic dysfunction should be detected and treated (manually or by neural therapy), not only for its own benefit, but also because other interference fields will be more easily found and treated if this is done first (see Plates 14, 15 and 16).

Some interference fields provide no clues to their presence during physical examination. Some scars, especially laparoscopic and arthroscopic scars and puncture sites of hypodermic needles, as well as the deep ganglia and the viscera, appear completely normal but contain interference fields with sometimes powerful adverse effects on the body's physiology. Until the early 1990s, the only practical method of detecting these hidden interference fields was through test injections of procaine. The Dosch textbook[20] suggests that test injections be given in whole series of potential sites for each clinical condition. Needless to say, this approach is of limited practical application for the large proportion of the population with "needle-phobia".

By autonomic response testing

The final method of finding interference fields, autonomic response testing, is in a class of its own. This method is highly subjective and potentially controversial but has proven of immense value to those who have mastered it. This method is discussed in detail in Chapter 4.

Treatment of interference fields

A variety of methods are available for treating interference fields. The classical approach (and still the "gold standard") involves either a direct injection of dilute procaine into the interference field (Fig. 3-1) or a number of superficial injections into the skin of an affected segment (known as segmental therapy) (see Plate 16). These methods are explained in detail in Chapter 5.

For somatic dysfunction, the most straightforward treatment method is manipulation. However, for the majority of physicians who do not have this skill, injection of procaine into the skin over the involved area is a reasonable alternative. This is described in detail in Chapter 5.

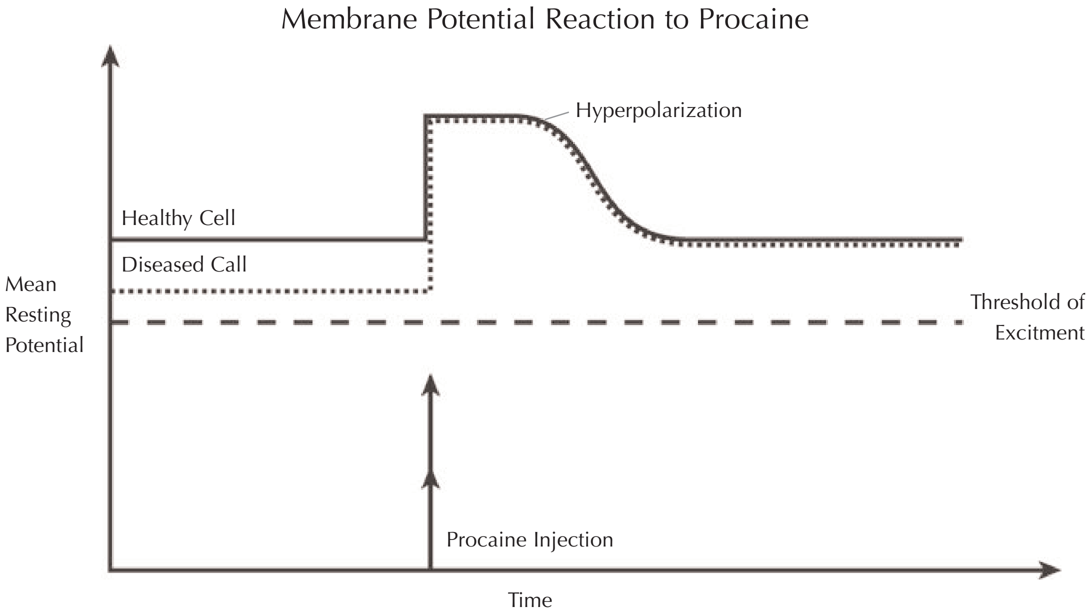

Fig 3-1. Effect of procaine on resting cell membrane potential. Procaine temporarily hyperpolarizes both healthy and diseased cell membranes. After the effect of the procaine wears off, the membrane potential of the diseased cell returns to a level closer to normal.

A third category of treatments is electrophysical therapy, including electrodermal blocks and use of the Tenscam device (Crosby Advance Medical, Orlando, Florida). These treatments deliver energy of different kinds, which seem to have the effect of restabilizing cell membranes. They appear to be as effective as traditional procaine injections and (for somatic dysfunction) manipulation.

Acupuncture is another treatment alternative, even though the rationale for its application appears to be quite different from that for neural therapy. Certainly an overlap exists between Eastern concepts of illness and the neurophysiological model presented here, but for a number of reasons it would be unwise to carry this comparison too far. First, there are profound differences in conceptions of disease and dysfunction between Western and Eastern medicine. Second, examination of Eastern medicine from the standpoint of Western anatomy, physiology and psychology has only recently begun. With time and effort, it may be possible to integrate these approaches, but much remains to be done. Third, acupuncture, as with every healing art, depends to a great extent on the skill of the practitioner.

Even setting aside these provisions, it is probably safe to say that acupuncture *as an isolated technique* is a weak method of treating interference fields. This statement is based only on the limited observations of those physicians who have experience with or have observed the results of both approaches, and it is impossible to say at this point whether oriental medicine *as a whole* is more or less effective than this Western neurophysiological model.

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