



# The Medical Problems of Musicians

**U**NTIL recently, if you were to read the title of this article you might have rechecked the journal in your hand to be sure that you had not picked up the wrong one. In 1988, although still not commonplace, finding articles in medical journals about the arts and in music journals about medicine is no longer a rarity.

*The author is an assistant professor of clinical medicine at Northwestern University Medical School, the director of the Northwestern Medical Program for Performing Artists, Chicago, Illinois, and the editor of the journal Medical Problems of Performing Artists.*

Why this has happened is not altogether clear but stems, I believe, from a number of factors. One of these is that with the success of such new specialties as sports medicine, doctors and other health personnel are approaching some types of medical problems in a new and, for them, somewhat innovative way. This involves not only the idea of looking into the workplace for the origins of injuries and disabilities, as is done in other areas of occupational medicine, but also the recognition that, in order to resolve and prevent these problems, the doctor must be familiar with what created the problem. And, perhaps most crucial, doctors are realizing that the prescription must make provisions for returning to the activity that was responsible for the problem and, in all likelihood, doing this sooner than might be optimal or traditional.

The problems are not new, but this awakening by doctors, coupled with an increasing openness on the part of the performing artists in dealing with medical problems, has helped to create the new and rapidly expanding field of "music medicine" or "arts medicine." If the growth of the specialty seen in the last four or five years continues at the current rate, a welcome result will be the ability to reduce the frequency and severity of the disabilities that have been the unfortunate by-product of musical study and, as a consequence, that have compromised or terminated so many careers of great promise.

In this brief article I will try to give only a survey of some of these problems and suggest what I feel are crucial ways in which performers and medical personnel should collaborate to learn more about the whys and wherefores of these injuries in order to prevent, or

at least about, their occurrence in such large numbers. The object is not to make you medical diagnosticians, but to introduce those of you for whom this may be a new concept to the types of medical problems we see in musicians. And for those of you who have had such personal experiences involving yourselves or your students, I hope to put these problems into the context of the overall medical picture by giving the range of problems that occur and how they frequently tend to overlap. I will also share some medical conjectures as to why some of these problems develop at certain times and in certain individuals, as well as how we address them therapeutically.

### Evaluating the Symptoms

The typical musician patient presents himself to a doctor with pain, which may be in the hand, wrist, arm, shoulder or several sites. Less commonly is there any deformity, swelling or redness, and it is because the findings may be so subtle that, in the past, many of these patients were shunned by doctors who found no obvious pathology. Being unfamiliar with the demands of musical performance, these doctors did not recognize that minimal abnormalities might wreak havoc for a musician. In fact, most of us who specialize in caring for musicians feel it is essential to examine the patient at the instrument in order to put together what may be a rather vague symptom with a diagnosis.

In addition to pain, symptoms may include weakness, incoordination, tingling, numbness, stiffness or just a poorly articulated sense that what was technically possible previously has become more difficult. Again, these symptoms are frequently best expressed by the patient in musical terms — for example, the inability to play a specific piece of repertoire or difficulty performing certain maneuvers on a particular instrument, such as trills and certain chord progressions on a piano or double stops on a violin.

Although pain is the most frequent

initial symptom noted by musician patients, certain disabilities may have no associated pain. The location of pain may be pinpoint at the start and become more generalized, or it may move from place to place. Conversely, a pain may start as diffuse and, as a problem evolves, becomes more localized. A pain may start as a transient and insignificant annoyance and progress to such severity that a patient is incapacitated in everyday, non-musical activities, or it may remain a factor only in playing.

One cannot always prognosticate on the basis of the severity of the pain, in part because of its subjective nature. There are some stoic individuals and some others who have a low or even changeable threshold to discomfort. Nor does the location of the pain or any other symptom necessarily give an anatomic definition of the pathology. That is, pain in a part of the arm does not tell you in and of itself if the problem stems from that muscle-tendon unit, joint or nerve, or if it may be referred from some distant site. Just because a patient tells you of a weakness, you cannot solely on this basis make a diagnosis of a nerve that is impaired.

The problems that we see in musicians most characteristically emanate from the tendons, their sheaths, the muscles, the joints, the nerves and, rarely, the bones, themselves. When a patient presents himself to us, therefore, we take his medical history to learn of the symptom, and we also consider the history of the symptom: how long it has been there, previous similar episodes, history of trauma, what things make it worse or better, what has happened since the symptom developed, and a bit about the person's general health. After this we examine the patient to determine not only the exact location of the problem, but also to define what is working and what isn't in terms of the muscles and tendons, the joints and the nerves. Optimally this should be a general examination to ascertain if the current symptom may be part of a more gener-

alized disease, as well as to evaluate for other problems.

### Diagnoses

The most common diagnoses relate to a part or parts being overused. Every tissue in every person has a kind of individual breaking point, beyond which it cannot be stressed without some sign of distress. Although the term "overuse" has itself been overused, it refers in essence to this phenomenon. When a person is diagnosed as having an "overuse syndrome," most physicians use it to describe a situation in which there may be pain, or even some weakness, but for which no other anatomical diagnosis can be made.

Overuse, and in some instances misuse, is probably responsible for most of the other more traditional diagnoses, which I will now discuss. Thus we have "the overuse syndrome," a noun, and "overuse," a verb. As we learn more about the medical problems of musicians, I am hopeful that this current state of confusion will be resolved, enabling us to have more specific, pathological diagnoses for what is now, for lack of understanding, being "wastebasketed" into the category of "overuse syndrome."

In addition to the obvious possibilities of strains and sprains of muscles, tendinitis is a frequent diagnosis. Tendons are the extensions of muscles by which they attach to bones and joints and where the stresses of the activated muscle are felt. With repetitive activity of a muscle, and with increasing amounts of tension on these units, there is great potential for inflammation and injury. Although symptoms are variable, pain is a constant, and swelling, stiffness, weakness and tingling may also occur. The site of the pain and tenderness can be anywhere along the course of a given tendon or group of tendons. Tendons are encased in sheaths, and occasionally this structure is inflamed, so-called tenosynovitis. The lumps suffered by some patients, known as ganglia, are a consequence of this type of inflammatory process.

**T**HE nerves that innervate the muscles of the arm and hand can become trapped in scar tissue, trapped in inflamed and swollen tissue or trapped by congenital aberrations such as extra ribs. These conditions are called entrapments. Nerves can be trapped anywhere in their course from the central nervous system or spinal cord to the muscles that they supply, or to the skin and other structures that they supply, if one talks of sensory rather than motor nerves. Certain areas of the body are the most frequent sites, such as carpal tunnel syndrome at the wrist, ulnar nerve entrapment at the elbow or near to it, and the thoracic outlet syndrome in the chest at the base of the neck. Again, the symptoms caused by these entrapments are variable, as are the treatments, and each patient must be carefully evaluated for these diagnoses to be made reliably.

The final general diagnostic category into which musician patients fall is one that involves symptoms such as loss of motor control but with no impairment of conduction by the nerves. This is the diagnostic category into which the well-publicized and tragic disabilities of Leon Fleischer and Gary Graffman fall, and about which we know the least as to cause, the exact nature of the injury and what to do about them. The patient suffering from these types of problems may lose the ability to control one or several fingers, with the appearance of stereotypical cramp-like involuntary motions of the affected digits.

Considerable interest in these so-called focal dystonias has arisen because, while not common, they do affect a significant number of instrumentalists, frequently in the prime of their careers. Those clinics seeing the largest number of musician patients report as many as 10 to 15 percent incidence in those populations. (That is, of the already injured musicians referred to specialty services, there are

this many, not 10 to 15 percent of all musicians.) As of this date, one cannot state with any assurance that medicine has much to offer people so afflicted.

However, individually some patients have reported improvement based on therapies ranging from biofeedback, to anti-Parkinsonian medications, to working with specific teachers on technique changes and, finally, to the yet experimental but hopeful therapy of serial injections with the toxin responsible for botulism. Some musicians with focal dystonia (literally, a local change in muscle tension) are able to continue functioning by changing technique or repertory, but this is unpredictable, as evidenced by the failed yet valiant come-back attempt of Leon Fleischer.

### **Treatment**

Without going into the specifics of therapy for each type of injury, one can say that in general, with the notable exception of the above motor-control problems, most musicians' problems are solvable if appropriately treated in a reasonable time frame. As with all illnesses and injuries, delay tends to increase the severity of a given problem, and compromises in musical technique may compound the original problem.

This is not to say that musicians need to seek professional medical help with every ache or pain. Many problems are self-limited and take care of themselves if a reasonable approach is taken, including temporary rest, the judicious use of aspirin and, when indicated, ice or heat.

Symptoms that continue over several days in spite of this, that become worse in intensity or persist beyond the practice period into daily activities, or that even interfere with sleep, require professional intervention. Harm rarely comes from an "unnecessary" visit to the doctor. That is, it is appropriate to seek relief from anxiety about a complaint, or to be told that no further treatment is necessary at the time. This is preferable to ignoring a symptom until it becomes disabling, when earlier attention might have

prevented the need for more complicated or costly therapy, or longer periods of disability. The old adage about "an ounce of prevention" is one to heed regarding musicians' injuries.

Therapy characteristically calls for rest, either relative or absolute. When absolute, the use of a splint to put a part at total rest for a period is occasionally called for, but this is in itself not without hazards. A loss of muscle tone, muscle mass and strength may occur after a rest as brief as a week. Therefore, when splinting is used, we must weigh the risks with the benefits. Sometimes, for this and other reasons, splinting is used just during the night or only periodically during the day. Again, there are no absolute rules about rest from the inciting activity — that is, from playing the instrument. Much of this is a judgment call on the part of the treating physician regarding the severity of the injury and the risk of further injury. The prescription also stems from knowing the musician patient, including the patient's ability to be compliant! These and many other factors should be taken into account when deciding on the type of rest needed by a particular patient for a particular injury, as well as the duration of this altered activity.

Ice and heat are also used in treatment, depending in part on the philosophy of the treating doctor. More importantly this kind of prescription may depend on whether one is dealing with inflamed tissue (ice), a muscle spasm (heat), or whatever other problem is at hand.

Medications used most frequently fall into the category of the non-steroidal anti-inflammatory drugs, of which aspirin and ibuprofen are the most common. It is important for non-medical people to understand that, while pain relief is a desired result of using these, it is the anti-inflammatory activity which is primary. Cortisone-group drugs are used sometimes locally, by injection into an affected area, or by mouth (pill) briefly. These, like all medications, have potential side

effects, but they also have tremendously good therapeutic effects when properly used. No medication should be used frivolously, and responsible physicians feel as strongly about this as do apprehensive patients.

An important part of many treatment regimens is exercise, used to recover from a given injury, as in the stretching-out of scar tissues or tightened tendons, to strengthen where a problem may have come about from inadequate or improperly applied muscle action. Exercise is also important for the prevention of injuries. The playing of any instrument involves highly coordinated activity, not just of the hand and arms, but also of the back and all of the body's postural muscles. An untuned body is more injury-prone by being less resilient and by failing to provide the needed support for the muscles more immediately involved in performing.

This is a pitch for good general conditioning for the musician, in order to prevent many of the injuries that we are currently seeing in such abundance. When we refer to good muscle tone and strength, we are talking about muscles that have good endurance capabilities and not sheer mass or bulk. In fact, heavy weight training can not only directly produce injuries in musicians, massive muscles that result from the use of weight training may also make playing more difficult.

Finally, surgery may be indicated in selected conditions as a primary treatment or, in others, as a last resort when other more conservative modes have failed. Many injuries from trauma must be repaired surgically, and many of the nerve entrapments can be relieved only, or at least most expeditiously, by surgical intervention. Rarely is surgery an emergency so, as in many other non-musical maladies, it is frequently appropriate to get a second opinion.

Certainly it is optimal to choose a surgeon who is not only supremely qualified to do the job, but one who also has had specific experience in operating on the hands or arms or other involved body parts of musicians. This becomes especially relevant in dealing with the recovery process where there may be options for the timing of such things as occupational therapy to not only hasten a given recovery period but to assure it as well.

## Causes and Risks

The most frequent factor responsible for injuries in musicians appears to be overuse, both qualitatively and quantitatively. That is, too much time is spent doing the same activity, as well as doing it with excessive intensity or tension. What may produce this situation is highly individual and varies in the same person from one time to the next.

However, some highly predictable situations common to most instrumentalists frequently precede a physical disability. These include a sudden increase in practice or playing time (as when students return in the fall to a heavier schedule than they had over the summer), a change in teacher with altered technique, a new unfamiliar instrument, preparation for an upcoming recital or audition — in fact anything, musical or not, that significantly increases stress.

A change in repertory may call for the use of muscles or joints that have not been suitably primed. The eager student attempting to learn a piece too rapidly may incur an injury by practicing difficult passages repetitively for extended periods without allowing for adequate rest of muscles and joints. Or a musician with a new instrument that plays differently than a previous one doesn't acknowledge some of the problems of this learning period and simply overdoes it. Individuals intent and absorbed in any activity tend to overlook or have an increased threshold to discomfort or fatigue, and an injury may become apparent only after the damage is done.

Unquestionably there are individual idiosyncrasies in the vulnerability to musician injuries, and we are just beginning to be able to identify some of these. For example, posture at the instrument and certain aspects of body configuration, such as hand size and the relative lengths of upper and lower arm segments, play an important role in how the instrument and the instrumentalist accommodate to one another.

From our own clinical experience at Northwestern Memorial Hospital, it would appear that the excessive laxity of certain joints of the hand and fingers may increase the potential for a variety of overuse injuries and painful syndromes. As we have studied some of the musicians with these joints, it appears that a frequent concomitant is weakness of some of the intrinsic hand muscles. If exercised, these muscles may help compensate for the joint

laxity, which is itself generally not remediable. Musicians who are generally fit, and therefore who have good overall muscle tone, appear to be at less risk for playing-related injuries than their more sedentary and out-of-shape colleagues. Of course, those who may take time off to exercise also may be protected by spending less time practicing!

The most highly individual and variable risk factor, as well as the most difficult to control, is stress. Although there are what may be described as generic sources of tension peculiar to the life of virtually all musicians, such as solo appearances, concerts, auditions and juries, the response to these depends in part on the individual's own emotional constitution. These are questions for ongoing concern and discussion that cannot be dealt with adequately in a short article. Suffice it to say that psychological stress cannot be separated from physical tension, so an individual musician's mental state is an important consideration in the production of or protection from playing-related physical problems.

At the risk of oversimplifying, an anxious person frequently manifests this stress by having a tense body. Muscle tension in excess of that required for a particular task demands more work of that muscle, especially when there is failure of opposing muscle groups — that is, flexors and extensors — to relax when they are not needed. Fatigue in muscles tends in itself to cause increasing tension. Therefore muscles that have been overused, or that do not have good endurance capacity, are under more tension than those that are not tired or that are better conditioned. Frequently the musicians themselves are aware of this tension, and it is usually readily apparent in the physical examination.

## Prevention

Although much study remains to be done in order to better understand musician injuries, we can get valuable information regarding the prevention of some of these by looking at what is already known. If the overwhelming number of injuries appears to stem from overuse and misuse, it is axiomatic that physicians and other therapists, teachers and the performers themselves turn their attention to preventing this from happening. Doing this involves teaching teachers about anatomy, physiology and psychology, which can be incorporated into traditional music teaching. In addition, there must be an appreciation of the



importance of what transpires in the practice room that may be damaging, for example, bad habits that go uncorrected for long periods of time until they are difficult to unlearn.

Teachers, students and school administrations must learn that individuals vary in their vulnerabilities to injuries and that appropriate and prompt treatment are not only critical but more relevant than judgments of right or wrong, good or bad. Understanding that the study of a musical instrument can provoke medical problems must extend to the parents of young children just embarking on lessons as it should be also to the primary teachers. Appropriate direction should be given in the choice of an instrument, to the aforementioned practice supervision and to career guidance before reaching the conservatory level, as well as in the curriculae of the music schools. A number of medical injuries we have seen surely relate to the attempts of misguided musicians, parents and teachers to have a student reach a level of performance that may be unrealistic for any number of reasons.

Assuming that most students who find themselves embarked on musical careers have the capacity to succeed, they must be taught both formally and by example how best to preserve their health. In a field that appears to be

getting more rather than less competitive, efforts should be made to reduce unnecessary stress, both physical and mental. Different individuals respond differently, not only to stress but also to a host of stress-reduction techniques that are available. It is laudable that many schools are now offering courses in Alexander Technique, which has been helpful to many, but is just one of a handful of methods, including Feldenkreis, Yoga and others.

I have already discussed the importance of overall physical conditioning as a protection from injuries. Diet and sleep are also crucial in sustaining good health, and it is not inappropriate for teachers to consider this fair territory to explore with their students.

The peculiarities of the teacher/student relationship in music is fascinating and lends itself to much which can be positive and singularly important, just as it can be potentially hazardous when abused. This relationship does allow a level of involvement and concern between mutually caring individuals that cannot transpire in an ordinary classroom. Many students, in my experience, have tended not only to deny their symptoms to themselves, but also have been reluctant to share what is happening with their teachers. It is critical that teachers be informed about early problems so that corrective

action can be taken before more serious injuries occur. This action can range from changing technique or repertory to suggesting a period of musical rest, to an appropriate medical referral. It does not however, include expanding the role of the teacher to becoming a studio therapist without license.

### Summary

The new field of arts medicine is an exciting and rapidly expanding one, in which much has been learned already about musician injuries and even more remains to be discovered. Most of the maladies have explanations and treatments that can resolve the problems with return to full function, but prompt and informed care is essential.

Informed teachers and students will do much to reduce the incidence and seriousness of the disabilities, and medical specialists active in the field stand ready to assist. Only with collaboration between music and medical professionals can the information come which is needed to expand the understanding of the injuries of performing musicians. Hopefully, the next decade will provide us the opportunity to acquire such knowledge and to enable music making to be the trouble free, enriching and satisfying experience that it should be.

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