Medical Management of the Professional Singer

An Overview

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Caring for the professional singer, whether an operatic performer or serious amateur, involves careful consideration of both physical and emotional components, as it does in other performing artists. However, because the head and neck contain representatives of other major organ systems in close proximity to the phonating larynx, singing is additionally vulnerable to a range of diseases of the respiratory, gastrointestinal, and endocrine systems. This review provides an overview of the conditions typically encountered in singers. These include occupational disorders (muscle tension dysphonia, vocal nodules, vocal hemorrhage and polyps, chronic voice deterioration), general health issues with vocal implications (respiratory diseases, gastric reflux, endocrine problems, medication usage), as well as lifestyle considerations. *Med Probl Perform Art* 2009; 24(1):3–9.

By way of preliminary definition, we consider professional singers those vocalists who perform for money. Some, a rare and fortunate few, sing full time and earn their living from vocal performances. Most singers, however, need to hold "day jobs," jobs which, for some unexplained reason, are often also vocally taxing: teachers, waitresses, salespeople. On the amateur side, there are many singers who have regular engagements, singing in church or with a performing ensemble, working on an almost professional level without a salary. So the definition of "professional singer" needs, for this article, to be expanded to singers, men and women, who sing seriously, perform for their own pleasure and the pleasure of others.

Singing has many similarities with other performing arts, but also some important differences. Like instrumental performers, singers need to train parts of their bodies, in this case, the vocal tract, to perform exacting, physically and neurologically complex tasks. Initially, this requires developing awareness of movements which are normally reflexive, such as breathing, laryngeal posturing, and vocal fold movement. These functions are typically controlled by the lower centers of the brain and triggered automatically, often without significant cortical input. In the case of the respiratory system, breathing is driven dually, normally by the brainstem but also with a cortical override. Singers must gain conscious awareness of inspiration and expiration and learn to sense normally unappreciated proprioceptive stimuli, such as those that signal thoracic and abdominal distention (in the case of breathing), laryngeal position, and voice-generated vibration (in the facial area, or "mask").

Once the singer learns to perceive these sensations, she or he must then develop volitional control over movements which are normally part of an unconscious and uncontrolled reflex. Laryngeal elevation and depression, which for most of us occur involuntarily and instantaneously with swallowing or gagging, must be purposefully and dependably activated, since singing with a low larynx (at least for classical vocalists) is the main means of increasing vocal power, resonance, and color. The airway protection offered by the reflex closure of the three laryngeal sphincters (aryepiglottic folds, false vocal folds, and true vocal folds) is normally a mass movement. For singing, this triple reflex is teased apart and its components activated individually, so that only one (true vocal folds) contracts, while the other two remain relaxed and open. The singer must thus deconstruct the elements of reflexive sequences (i.e., breathing, swallowing) and gain voluntary control over specific elements which are then used in singing.

Finally, these newly volitional acts of movement or positioning again become "reflexive," but this time under the control of the cortex. By this I mean that singers can convey color, emotion, and other elements during a performance without thinking in real time about the mechanical elements of vocal tract position and movement.

There are, however, several important differences that distinguish singing from other types of performance. While a piano teacher can visibly demonstrate hand position, arm weight, and other elements of playing to the student, almost every part of the vocal tract is hidden inside. Only the articulatory elements of voice production (the tongue, teeth, and palate) are somewhat visible. The driver of the voice (lower respiratory tract), the voice generator (larynx), and the voice modifiers (supraglottic larynx and pharynx) can only be examined endoscopically, and usually not in real time.

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This has two implications: first, it means that the singer needs to use primarily nonvisual feedback while learning and performing. This feedback is mostly auditory (air conducted sound to the outer ears, and bone-conducted sound through the bones of the skull to the inner ears), but also proprioceptive (mechanical resonance in the chest, facial bones and skull, and position sensation via the spindle receptors of the muscles involved in moving the larynx and pharynx).

The second implication is that vocal performers, dealing with an invisible product generated by an unseen mechanism, by necessity resort to imagery to explain what happens during singing. Descriptions of the sound "bouncing off the soft palate" or forming "a column through the top of the head" are common. Perhaps because images are so important during teaching and performance, singers may be more open to suggestion, and responsive to the placebo element of any medical treatment.

The second difference between singing and instrumental performance pertains to the muscular task involved. Unlike piano or violin playing, which may require rapid alternating movements involving antagonistic groups of muscles, in singing much of the movement is passively generated. Expiration during normal breathing is passive, related to the elastic recoil of the thoracic cage. Even with active expiration during singing there is a passive component, as the distended muscles of the abdominal wall return to their resting position. During phonation, which involves rapidly alternating opening and closing of the vocal folds, only the closing component is active, controlled by the laryngeal adductors; opening is passive, the vocal folds blown apart by the pressure of the air column pushed up from the lungs and through the trachea. In fact, although the movement of the vocal folds is far more rapid than the pianist's trill (1024 cycles per second for a high C), the speed and excursion of active laryngeal muscle contraction is rather limited when compared to a trill on the piano or the violin. This may be why among singers there is no equivalent to the occupationally related cramping and other overuse problems seen in the hands of instrumental performers.*

A third difference lies in the relative delicacy of the vocal folds compared to the fingers of the instrumentalist or the legs of a dancer. The vocal folds are small and thin, vibrate rapidly, and, with excess muscle tension, are at significant risk for trauma. The practical application of this fact pertains to practicing. While many pianists practice for hours on end, singers do better if they vocalize for shorter periods, several times a day. Since the purpose of practice, to a large degree, is not about mechanical muscle strengthening but remapping the central nervous system, singers must learn to practice with high efficiency, but for shorter periods of time. I have on several occasions had to caution overzealous voice students with traumatized and swollen vocal folds to practice less!

A final difference pertains to the fact that the head and neck, which house the voice generator and vocal modifiers, contain representatives of every major organ system in the body, except for the genitourinary system, all part of, or in close proximity to, the phonating larynx. While the instrumental playing may be most affected by systemic disorders of the neuromuscular system, singing is additionally vulnerable to diseases of the respiratory, gastrointestinal, and endocrine systems.

To organize this overview, I have divided the discussion into three areas:

1) Occupationally generated disorders,
2) General health issues with vocal implications, and
3) Lifestyle issues.

As with other areas of performing arts medicine, it is important to keep in mind that a singer is not a disembodied set of vocal folds, but a complete physical and mental entity who happens to sing for a living. Because singing is such a complicated and emotionally linked way of life, almost every part of the body, almost every aspect of the singer's life, may have an impact on vocal performance.

OCCUPATIONAL DISORDERS IN SINGERS

Muscle Tension Dysphonia

Singing involves the adaptation of parts of the body, which have evolved for an entirely different purpose, to a new task. The structures of the vocal tract are not "designed" for singing, and the vocal folds specifically were not built for hours of rapid repetitive motion, strain, and friction. Occupational disorders of the larynx are often the result of excessive muscle tension, excessive friction, and muscle fatigue.

As mentioned earlier, mastering singing involves making reflexive activity voluntary and voluntary activity reflexive. Specifically, the singer must learn to contract groups of muscles in isolation while simultaneously relaxing muscles which are either antagonistic or not involved in phonation. By way of illustration, muscles of the neck and shoulders are not specifically antagonistic to vocal fold adductors, but heightened tension in these areas increases overall neuromuscular tone (as demonstrated by the Jendrassik reinforcement maneuver†), thereby increasing fatigue and decreasing vocal efficiency.

The overall aim is to produce the greatest spectrum of vocal pitch and intensity with the least effort. This is done by maximally utilizing abdominal breathing (which is more efficient and less taxing than thoracic breathing) to push a column of air through the glottic aperture and set the vocal folds into vibration, and then modifying the primary sound

*Although there are many laryngeal and oropharyngeal tremors and dystonias, these are not induced by excessive or incorrect singing. Recent research, however, suggests that even dystonias among instrumental musicians may relate more to increased brain plasticity and deregulation than to actual mechanical cramping in the hands. [1]

†Increasing muscle tension in any group of muscles, such as by clenching the jaw or by trying to pull apart the hands with fingers interlocked, increases general muscle tone thoughout the body, as demonstrated by heightened deep tendon reflexes.[1]

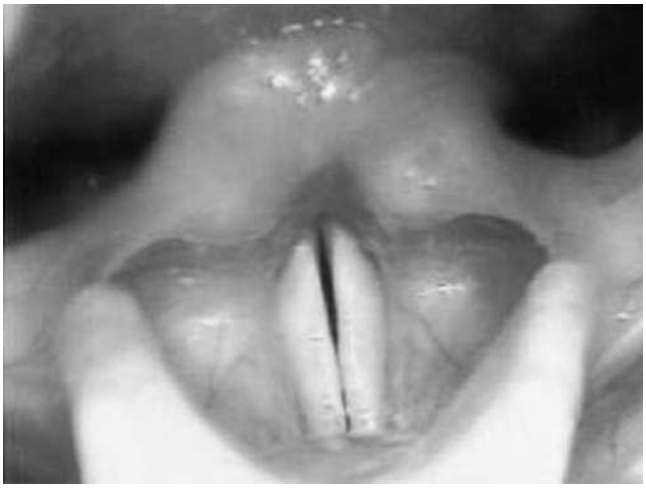

FIGURE 1. Muscle tension dysphonia. Note the failure of the vocal folds to fully approximate posteriorly, resulting in a breathy hoarseness throughout the vocal range.

by adjusting dimensions of the supraglottic and pharyngeal resonating compartments. Power comes from the lungs, vocal intensity and color from the pharynx.

There are two sets of extralaryngeal‡ muscles which determine the vertical position of the larynx: the elevators and the depressors. Since laryngeal elevation must occur quickly and powerfully when swallowing, the elevators are more numerous and more powerful. If both sets of muscles were engaged in an isotonic tug-of-war, the elevators would win. In order to obtain optimal vocal results, the larynx needs to be pulled down, thereby expanding the volume of the supraglottic and hypopharyngeal air column. Vocal training therefore involves learning to contract the relatively weaker depressors while relaxing the more powerful elevators.

Untrained or undertrained singers typically sing with excess muscle tension. Because they contract both elevators and depressors simultaneously, a net elevation of the larynx results. This reduces resonance and loudness; therefore, the singer will try to force the voice to be louder by further contracting the laryngeal muscles, both extralaryngeal and intralaryngeal. Not only does this produce a tight hyporesonant sound (due to the high larynx and constricted pharynx), but it also squeezes the vocal folds tightly together, increasing the friction between apposing surfaces of the vocal folds. More thoracic air pressure is now needed to blow the folds apart, and eventually a generally heightened muscle tone develops in the entire vocal tract. Hoarseness and eventually vocal fold nodules will result from chronic muscle tension dysphonia (Figure 1).

Stress and depression have been significantly associated in patients with muscle tension dysphonia.[2] It is not difficult to imagine that among singers with this condition, the physical and psychological aspects may interconnect in an escalating fashion.

‡The muscles of phonation either connect one part of the larynx to another (intralaryngeal), or they connect the larynx to adjacent parts of the head and neck (extralaryngeal).

Vocal Nodules

Nodules of the vocal folds are fibrous calluses, which form on both vocal folds at the point of maximal trauma. They develop on the free vibrating edge of the fold, at the junction of the anterior one-half and posterior two-thirds of the fold's length. They are bilateral and usually symmetrical, and they may range in appearance from tiny to large, soft to firm (Figure 2).

Vocal nodules are an occupational disorder, the result of inadequate technique, excessive singing, or a mismatch between the singer's physical and technical abilities and the vocal task. They are more commonly seen in women with higher voices and in pop singers. A particularly vulnerable group is children or teenagers singing popular music. These young singers do not take lessons, or they study intermittently. They lack technique, have larynges that are infantile or not fully developed, and try to emulate recordings of adult singers which have been electronically altered and are humanly irreproducible. The problem is often made worse by well-intentioned facilitators, such as the *American Idol*-struck stage mother, the high school musical director, and the child's peers.

Even children in opera choruses may be at risk, although they normally study voice as well as perform. They usually sing without amplification, on a large stage, and need to compete vocally with trained adult singers and an orchestra. Not uncommonly, these children are encouraged to yell, rather than sing, in order to be heard.

There is no predictable relationship between nodule size and voice quality; hoarseness is common to all, especially when attempting to sing softly at the higher extremes of the vocal range.[3] Definitive treatment for nodules always involves voice therapy and often a fundamental reworking of the singer's technique. This is slow and time consuming and requires commitment on the part of the singer and support from family and friends. Surgical removal should only be offered when the singer has been retrained to avoid the technical pitfalls which led to the nodules in the first place.

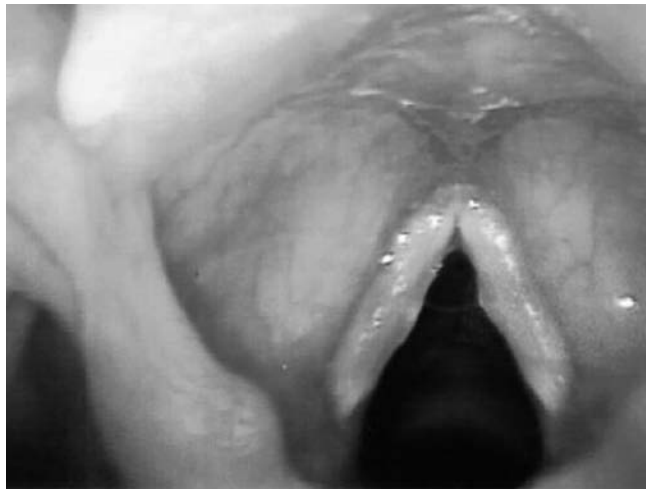

FIGURE 2. Vocal nodules. These nodules are rather small but may cause significant impairment, depending on voice type and repertoire.

FIGURE 3. Patient is a professional cantor with hoarseness due to hemorrhagic polyp of right vocal fold. At surgery, a subsequent unsuspected fresh hemorrhage was found.

Vocal Hemorrhage and Polyp

Visible blood vessels are not uncommonly seen on the vocal folds of professional singers, and they may simply represent increased vascularization due to singing. When such vessels rupture, however, blood may extravasate under the surface of the vocal fold, forming a subepithelial hematoma which can be localized or extensive (Figure 3). The onset is sudden or rapid, it is painless, and it causes hoarseness and rarely complete loss of voice. Predisposing factors, apart from the presence of a vulnerable vessel, include factors that increase the likelihood of bleeding, such as blood thinners or menstruation. A precipitating episode (I have seen coughing, vomiting, vocal strain, straining at stool, weight lifting, and giving birth, among others) is a key historic feature.

Treatment requires complete vocal rest and endoscopic monitoring to document resorption of the hematoma. If the diagnosis is not made and the singer continues to sing, resorption is hampered, and a vascular or hemorrhagic vocal polyp may form at the "strike zone" of the vocal fold (Figure 4). These polyps differ from nodules in several ways: they are unilateral, they represent a single traumatic episode rather than habitual voice abuse, and they do not require voice therapy. If the polyp does not resolve with vocal rest or steroids, it may need to be removed, usually with a laser.

Chronic Vocal Deterioration

An experienced vocal professional may present with a voice that is weak and wobbly. While a normal vibrato is a pleasing tone-centered oscillation of the pitch, averaging 5.2 to 5.8 Hz/sec,[4] the wobble is slow, wide, unmodulated, and lacking a clear tonal center. It is clearly different from a vibrato[5] and occurs due to loss of neuromuscular control over the voice. Resonance and power are not affected. A number of suggested causes have been proposed, including excess tension and lack of support to the voice.

We see this problem in two groups of singers. First, it develops among younger patients who perform habitually with excess muscle tension, either because of poor technique or because of unreasonable demands placed on the mechanism by inappropriate repertoire. It is more common among older singers who have had a long and successful career but are now faced with having to maintain a certain level of performance with gradually dwindling resources. The cumulative damage occurs from decades of performance, big repertoire, as well as the singer's given anatomic and physiologic resources. Because a normal vibrato is believed to be maintained by an auditory feedback loop reflex,[6] it is possible that deterioration of hearing in the older singer may also play a role in the loss of control over the oscillating voice.

This form of chronic voice deterioration is difficult to treat. In most cases, the changes are irreversible, although a few remarkable singers have been able to rework the voice and enjoy an "Indian summer" period toward the end of their careers.

The vocal deterioration described here is seen in professional singers and is a distinct condition, different from the more common age-related loss of vocal quality seen in the general population, so-called presbyphonia.

GENERAL HEALTH ISSUES WITH VOCAL IMPLICATIONS

While singers are no less prone to common illnesses than the population at large, they not surprisingly perceive (and experience) every health issue from the vocal point of view. Even a normally trivial problem becomes a major one if it means canceling an important audition or performance or having to give up a gig (and the fee) to a covering artist. When dealing with singers, therefore, we must not be dismissive of seemingly minor complaints. The singer's larynx is by necessity held to a much higher standard than that of the conventional speaker. Furthermore, because singing is a function rather than a visible structure, and its perception is by definition subjective (auditory and proprioceptive), we need to listen to

FIGURE 4. Thrombosed hemorrhagic polyp on the right vocal fold. A lesion which is the result of a single incident rather than chronic voice abuse. Lesions like this do not resolve with therapy and require surgical removal.

both the voice and the patient, when they tell us that there is a problem.

With every physical illness, there is a psychological component. As mentioned in the introduction, singers are often more suggestible, hence more vulnerable to stress. Dealing with any health issue in singers requires recognizing and dealing with the often unvoiced psychologic distress which accompanies the physical illness.

Respiratory Diseases

For singers, in contrast to nonvocalists, common colds, minor bronchitis, and other benign self-limiting respiratory illnesses may require aggressive and directed treatment. This is particularly so if the singer must perform while ill. Taking a week off may not be an option, especially if the singer is in a musical run with no cover. Aggressive amelioration of the symptoms should be offered, including mucolytics, cough suppressants or expectorants, and decongestants (but see caveats below). This allows the singer to continue to work while a benign and self-limiting illness runs its course. It is important to advise such singers to modify their vocal expectations and efforts until the cold has passed, otherwise they may develop compensatory behavior, such as excess muscle tension. If such behavior persists after the original cold is gone, the compensation may become the disease.

The management of respiratory allergies needs to take into account the voice-related side effects of antihistamines and decongestants. To function optimally, vocal folds must be both internally hydrated and superficially moist. Singers are routinely encouraged to drink copious amounts of water (8 to 10 eight-ounce glasses a day) for internal hydration. Antihistamines are drying and can leave the surface of the vocal folds unprotected. To sing with dry vocal folds requires greater muscular effort, and the result is heightened tension, increased trauma to the surface, and a voice that lacks suppleness and control, especially with high notes. Decongestants, by constricting blood vessels, also produce dryness, although to a lesser degree. Good alternatives to managing allergies in singers include allergen avoidance, desensitization, and nondrying medications such as leukotriene inhibitors and herbal medications.

Asthma is a particular problem for singers, since inadequate pulmonary function produces a voice that lacks power. Decreased expiratory volume and increased expiratory time have further implications for sostenuto and musical phrasing. The etiology of asthma should be established as accurately as possible, and management should be such as to have minimal impact on the voice. With steroid inhalers, the possibility of thrush must always be considered, even in the absence of odynophagia and white patches in the hypopharynx. At times the findings with minor candidiasis are subtle, such as mild erythema and the complaint of "a film on the voice." In particular, Advair, a steroid-bronchodilator combination (fluticasone/salmeterol, GlaxoSmithKline), should be avoided if possible since it causes hoarseness.

Some physicians prescribe steroids and antibiotics concomitantly to speed recovery of the voice after an infection. Unless there is an overwhelming urgency to get the singer back to the stage, such as a career-making performance, my preference is to let the patient (and the voice) recover normally.

Gastric Reflux

Reflux of gastric contents, acid, and pepsin into the hypopharynx is a recognized entity and is called laryngopharyngeal reflux (LPR). It is distinguished from gastroesophageal reflux disease (GERD) in several ways. The symptoms may not include typical GERD complaints, such as retrosternal discomfort, but rather intermittent dysphonia, excessive throat clearing, globus, cough, and dysphagia.[7] The mucosa of the pharynx and larynx is particularly vulnerable, since it lacks protection against acid which is present in the stomach and lower esophagus. This implies that there may be damage to the pharynx and larynx without commensurate changes in the esophagus or stomach. Rarely, nocturnal reflux can rise to the level of the nasopharynx, causing nasal, sinus, and even Eustachian tube symptoms.

Common physical signs of laryngopharyngeal reflux include erythema of the posterior larynx, particularly the arytenoids, and a thickened band of mucosa between the two arytenoid cartilages (pachydermia laryngis), as well as erythema and a cobblestone appearance of the pharyngeal wall. Less commonly, the vocal folds may be red, or there may be a granuloma over the vocal process of one arytenoid.

In my personal experience, the commonest (and subtle) sign of reflux is an elevation of the larynx. The cause for this may be either reflex irritation of the muscles of the pharyngeal wall or a posturing abnormality in response to the sensory perception of discomfort or a globus sensation. These problems are seen typically in well-trained singers who have an otherwise unexplainable new onset of apparent muscle tension dysphonia. In fact, the sole sign of irritation may be a high and anteriorly tilted larynx with a persistent posterior glottic chink. Palpation of the neck confirms that the larynx is high, with contraction of the thyrohyoid space.

If reflux is suspected, either on the basis of history, symptoms, or signs, a limited but aggressive trial of therapy should prove or disprove the diagnosis.[8] Simultaneous treatment with proton pump inhibitors and antacids, as well as diet and behavior modification, should be employed. Only if such treatment fails should other diagnoses be entertained.

Endocrine Problems

The menstrual cycle is governed by estrogen and progesterone. The first 2 weeks of the cycle are estrogen dominated, the third week is progesterone dominated, and in the fourth week the period begins. Both estrogen and progesterone can cause fluid retention, but progesterone is more significant in this regard. Fluid retention affects the vocal tract, and female

singers commonly have vocal complaints in the week before their period: the voice is unwieldy, the vocal folds feel tired, the upper notes lack clarity and color. Once the period starts, these issues resolve, although the singer now may be at higher risk for vocal hemorrhage, especially if she also takes aspirin or NSAIDs to deal with menstrual cramps.

The best treatment involves modification of vocal expectations and vocal behavior. If the performing schedule cannot be altered, a mild diuretic should be considered. If the singer takes oral contraceptives, it may be possible to medically delay the period for 1 week, or, with some contraceptive methods, stop the period completely for several months.

Oral contraceptives have been implicated in voice change. Synthetic progesterones in some preparations break down to compounds with androgenic activity and therefore may darken the voice. The masculinized voice manifests loss of high notes with some gain at the low end of the range. This problem is especially prevalent in higher and lighter voices, such as coloratura sopranos and soubrettes, and less prevalent in mezzosopranos. Once the voice has darkened as a result of oral contraceptives, the change is usually permanent. For singers who are considering oral contraceptive medications, we recommend speaking with a gynecologist who is familiar with this phenomenon and who can recommend the appropriate low-dose hormonal preparation to minimize the likelihood of voice change. Exogenous preparations with androgenic activity, such as DHEA (dihydroepiandrosterone), which may be taken unknowingly as "dietary supplements," should also be avoided.

Vocal quality changes after menopause. Estrogen supports the mucosa and musculature of the larynx, and the gradual decrease in estrogen and progesterone production in the postmenopausal ovary leads to a voice that becomes thinner and less resonant. Suppleness and flexibility of the vocal folds darken the voice and can lead to loss of control, particularly when singing softly on the top, a problem especially prevalent among sopranos. Along with laryngeal changes, thoracic and abdominal muscles also decrease in strength and tone, leaving the voice less supported. The singer tries to compensate by increasing laryngeal contraction, producing a voice that sounds squeezed, thin, and harsh. These changes are gradual and vary greatly among women. Indeed, some singers, such as Dame Joan Sutherland, continued to perform well into their 60s.

In the past, we recommended that singers consider postmenopausal hormone replacement therapy to support the voice. Over the last few years, medical contraindications to hormone replacement have emerged. The singer therefore needs to make an informed decision, balancing voice, career, and general health risk. Many singers opt for "natural" hormones, so-called phytoestrogens, which can be found in soybeans, black cohosh, and other herbal products. It is not yet clear whether such "natural" hormones are any safer than prescribed formulations.

If a middle-aged female singer presents with chronic low-grade hoarseness, a voice that has lost color and possibly some high notes, subclinical hypothyroidism needs to be ruled out. Although overt hypothyroidism has long been known to cause hoarseness,[9,10] more subtle cases of Hashimoto's thyroiditis are commonly missed in this age group and may have significant vocal implications. Equally at (vocal) risk are known hypothyroid patients who may be undermedicated. In this group, we have encountered numerous patients whose thyroid indices are apparently normalized, but the singers continue to have vocal difficulties.

Effects of Medications on the Voice

Most medications, whether prescription or over-the-counter, have unintended side effects. For the singer, even mild side effects can have a significant impact on the voice. Physicians treating singers should be aware of these side effects and be prepared to be flexible in terms of prescriptions and alternate therapies.

Many medications are drying. In addition to antihistamines and decongestants, anticholinergic agents, sleeping pills, diuretics, antiemetic medications, antidepressants, and other psychiatric drugs can dry the vocal tract. When the larynx is dry, singers are not able to sing softly at the top of their range and will need to adduct the vocal folds excessively. This not only produces an impaired sound but can over time predispose to structural damage to the mucosa.

Numerous medications can predispose to vocal hemorrhage. In addition to aspirin and other NSAIDS, singers on prescription blood thinners such as Plavix (clopidogrel, Bristol-Myers Squibb/Sanofi Pharmaceuticals) or Coumadin need to be concerned. Vitamin supplements such as niacin and vitamin E also promote easy bleeding. Vasodilators include dietary alcohol, gingko, and some Chinese herbal supplements, such as tree ear mushroom. In addition to noting these items on the medical history, it is also important to record the quantities ingested, since many patients believe in the concept of "more is better" and may take excessive amounts of these substances.

Medications which are sedating can affect coordination, memory, and the artistic quality of a performance. Beta-blockers are sometimes given for performance anxiety but can make the performance lose energy and artistic merit. In general, because individual response to some drugs is unpredictable, I prefer to have singer-patients "audition" a new medication over a few days when they have no performances to see what effect the drug has on the voice.

LIFESTYLE ISSUES

Professional singers typically work under circumstances of physical and emotional stress. Physical stressors pertain to travel, late-night working hours, the unpredictability of venues, lack of sleep, and irregular diet. Emotional stressors include those which afflict most performing artists: constant competition, lack of financial security, strained interpersonal relationships, and, for the traveling performer, the lack of rootedness and the need to depend on "the kindness of strangers."

To optimally help singers, the physician needs to become familiar with their lives. A singer may arrive complaining of hoarseness, but with a background of recent transatlantic travel, jet lag, the stress of a recent indifferent performance and a poor review, and a body full of ingested and injected medications from various well-meaning physicians in other cities.

Whatever medical treatment is given must be accompanied by measured reassurance, one that comes from knowledge and experience. In this regard, the physician who treats singers should know something about music, voice types, and repertoire. Such knowledge makes the therapeutic effect of medical advice more powerful. Nothing undermines medical credibility (and any placebo effect) more for a singer than having to deal with a physician who has no idea what the performer does for a living.

A familiarity with performing venues also makes medical intervention more effective. Some theaters are dusty and moldy. Night clubs, while no longer smoke filled, may be overly air-conditioned and noisy. Ambient noise may be high, forcing the singer to speak and sing at injurious levels. Keep in mind that the ultimate vocal resonator is not the pharynx but the theater, and this is something over which the performer has no control.

The vocally impaired singer comes not only for treatment but also support. She or he may not feel comfortable canceling a performance or marking a rehearsal without a note or phone call from the physician.

Finally, I again need to state that the voice doctor is not treating a set of vocal folds and should not be abetting the impaired singer as she struggles from one performance to the next. It is easy to succumb to the request of the singer, a manager, and the theater and give yet another small course of steroids, "just to get through the next performance." Easy, but short sighted. A longer term and more holistic view needs to be taken to truly help singers fulfill their potential as performers.

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