**Special Article**

THE PHARMACOPEIA AND THE PHYSICIAN

LOCAL MEDICATION OF THE UPPER RESPIRATORY TRACT

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This is one of a series of articles written by eminent clinicians for the purpose of extending information concerning the official medicines. The twenty-four articles in this series have been planned and developed through the cooperation of the U. S. Pharmacopoeial Committee of Revision and The Journal of the American Medical Association.—Ed.

The use of local medications by the general practitioner in the treatment of diseases of the upper respiratory tract should be restricted for the most part to acute infections. It is to be emphasized that attempts to treat chronic disorders by such measures are fraught with serious danger until the diagnosis of the underlying pathologic condition has been thoroughly established. This as a rule requires examination by a specialist in this field. All too frequently cases are encountered in which local medicines have been carried out over long periods before a serious underlying infection or new growth has been discovered. The resulting loss of time commonly leads to serious or even fatal consequences.

**ACUTE RHINITIS**

The ideal therapeutic aims of local medication in acute rhinitis are the reduction of nasal congestion, the promotion or restoration of ciliary function and the destruction of pathogenic organisms. Recent experimental studies by Proetz, Lierle and Moore, Fenton and Larsell and other workers have demonstrated that many of our accepted local preparations are actually destructive to epithelium and favor infection by impairing ciliary activity. In the light of these investigations ephedrine sulfate (from 0.5 to 3 per cent solutions with 1 per cent as the usual strength) in physiologic solution of sodium chloride most closely meets the ideal therapeutic requirements by producing prompt relief of congestion without slowing the ciliary activity or destroying the epithelium. The commonly used nasal oils, containing liquid petrolatum, eucalyptol, menthol, camphor and thymol, all definitely slow or paralyze ciliary activity despite their recognized soothing properties. As vehicles for ephedrine, therefore, they would appear from these studies actually to lessen its therapeutic value.

The commonly used silver colloids mild protein silver and neosilvicol (10 per cent solutions) have been found experimentally by McMahon and by Fenton and Larsell to destroy epithelium and to impair ciliary action. Nevertheless they will continue to be widely used for their recognized empirical value. Merthiolate (1:5,000 solution) is commonly combined with ephedrine solutions for its antiseptic properties, but it also has a paralyzing effect on cilia. It is thus evident that many commonly used preparations may combine desirable with at least experimentally proved undesirable effects on the nasal mucous membranes. Ephedrine even in a dilution of 1:5,000 causes a slowing of ciliary activity. Furthermore, the marked congestion that follows its transient vasoconstricting action has led most rhinologists to abandon its use in acute rhinitis. It should be emphasized that nasal solutions containing menthol should never be employed in infancy because of their possible toxic effect. The indiscriminate use of liquid petrolatum as nasal drops in infancy is not entirely without danger in view of the numerous reported cases of lipid pneumonia from accidental inhalation. The usefulness of nasal drops will be increased by bending the head backward in the Proetz position or in the lateral head-low position described by Parkinson. The use of nasal douches is not recommended in acute rhinitis because of the possibility of inducing an otitis media. Bland ointments of zinc or boric acid are soothing when troublesome irritation of the nasal vestibule and upper lip is present.

**CHRONIC RHINITIS**

Chronic rhinitis includes such a wide variety of causes that careful study by a competent rhinologist is required before treatment can be outlined. A chronic discharge may be caused by sinusitis, infected adenoids, polyps, foreign bodies or malignant growths. It may be a local manifestation of constitutional disease, such as congenital syphilis or diphtheria, or the result of atrophic or hypertrophic changes in the nasal mucous membranes. Successful management commonly requires surgery or special types of treatment, and simple local medication consequently plays a relatively minor rôle. Certain preparations are commonly used in this work. Oily solutions containing menthol and camphor (1 per cent) in liquid petrolatum reduce congestion and lessen irritation (prescription A). Mild protein silver or neosilvicol (10 per cent) are probably the most commonly used antiseptics for tamponage. Under certain conditions, notably atrophic rhinitis, stimulating topical applications are of value. Among the best may be mentioned Mandl's solution (potassium iodide 1 Gm., iodine 0.46 Gm., and sufficient glycerin to make 30 cc.); ichthammol mixtures (ichthammol 1.3 Gm., menthol 0.2 Gm. and sufficient petrolatum to make 30 Gm.); tannic acid in glycerin (glycerite of tannic acid 60 cc., glycerin 30 cc.) and prescription B. Where bleeding areas occur, a bead of silver nitrate or chronic acid makes an excellent cauterant. Trichloraceto acid

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may be similarly used. Preliminary cocaineization will be required for this as well as for many surgical procedures. Cocaine hydrochloride solution of suitable strength is usually employed. It should not be used in children and should always be applied with caution because of the alarming or even fatal reaction that may follow in sensitive individuals. It has been established that preliminary medication before the use of cocaine greatly lessens its toxic effects. Morphine (from 0.01 to 0.016 Gm.) with atropine sulfate (from 0.00065 to 0.0004 Gm.) may be given thirty minutes before operations in which it is used. The barbiturates (barbital 0.65 Gm., phenobarbital 0.2 Gm. or pentobarbital 0.1 Gm.) given by mouth one hour before are also effective in lessening possible toxic effects. Pantocain has in my experience proved to be a safe and effective substitute for surface anesthesia in children. Nasal irrigations, carefully given, may prove of value in certain conditions, such as atrophic rhinitis. Mixtures containing salt, soda, and dextrose (1 teaspoonful of each in a pint of warm water) are commonly used. Hydrogen peroxide is helpful in such cases in loosening the crusts, preliminary to their removal by irrigation. Tampons moistened with peroxide may also prove useful in controlling epistaxis.

ACUTE INFECTION OF THE THROAT

Acute infections may attack the throat in the form of an acute pharyngitis or more diffusely as an acute tonsillitis of the catarrhal or follicular variety. Sometimes the staphylococcus or pneumococcus is responsible but as a rule the streptococcus is the causative organism. Most of the severe cases, especially the epidemic septic type, are due to the beta-hemolytic variety. The throat is affected in many acute diseases, notably scarlet fever, measles, diphtheria, Vincent’s infections or the secondary stages of syphilis. Acute inflammation followed by ulceration may result from granulocytomenia or acute leukemia and the true cause be overlooked, especially in the early stages, unless a leukocyte count is made. It is evident therefore that careful diagnosis supported by laboratory studies is necessary for successful therapeutic management.

LOCAL TREATMENT

In the early stages of acute pharyngitis the local application of silver nitrate (from 5 to 20 per cent), mild protein silver (10 or 20 per cent) or Maudi’s solution often gives relief. Vigorous swabbing, however, should be avoided. Gargles, so frequently prescribed, are often useless, especially in children, because the contraction of the tongue and pharyngeal muscles prevents the solution from reaching the inflamed parts. They may, however, be used in the form of salt and soda, one-half teaspoonful each in a glass of warm water or Dobell’s solution, 2 tablespoonfuls in a glass of warm water. In the more severe infections the use of hot salt and soda irrigations will be more effective. Lozenges containing small quantities of menthol, camphor, guaiac and codeine, orthoform tablets or calcidin-anesthein troches lessen the discomfort in mild cases.

In acute tonsillitis the most effective local treatment consists in irrigation of the throat every two hours with a warm solution containing 1 teaspoonful of sodium chloride and sodium bicarbonate in 1 pint of water. Warm glucose solution (50 per cent) made with “Corn Syrup” 1 part and water 2 parts is also effective. The patient’s head should be inclined forward with the mouth open so as to facilitate the flow. When irrigations are not possible nor well tolerated a similar warm solution of salt and soda, potassium permanganate (1:5,000 solution) or acetylsalicylic acid (five tablets crushed in a glass of water) may be used as a gargle.

C. Compound Glycerite of Iodine

<table>
<thead>
<tr>
<th>B</th>
<th>Iodine</th>
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<tr>
<td>Potassium Iodide</td>
<td>1.6 Gm.</td>
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<tr>
<td>Oil of Peppermint</td>
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<td>Glycerin</td>
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| M. Label: Topical application.

The practice of frequent and vigorous swabbing is decidedly not recommended. Semisuspension by raising the head by means of the hands placed over each mastoid process may be employed effectively to prevent swallowing when severe dysphagia is present.

FUSOSPIROCHEITAL ANGINA (VINCENT’S ANGINA)

The common acute infectious disease fusospirochetal angina is due to a symbiosis of organisms including a fusiform bacillus, a widely coiled spirochete (Spiroceroid), a vibrio and a coccoïd. These organisms are anaerobic and commonly multiply in the crevices about the teeth, in pockets under the gums or in the depths of the tonsillar crypts. Pathologic studies indicate that the spirochete penetrates deeply, produces the often extensive destruction of tissue characteristic of the lesion and is the chief agent responsible for the spread of the disease. The bacillus predominates in the more superficial zone and produces the febrile. Since the causative organisms are anaerobic, the fundamentals of treatment require open drainage with free access of air, the local application of oxidizing agents and local or general arsenic therapy to destroy the spirochetes.

A survey of the literature indicates that in the mild or diphtheroid type of lesion any antiseptic will cure. Silver nitrate (from 10 to 20 per cent), tincture of iodine, chronic acid (5 per cent), copper sulfate (10 per cent), gentian violet, methylene blue, acriflavine base and mercuochrome have all been used successfully in this type of lesion. For the more severe and widespread infections, however, active oxidizing agents and spirocheticides are essential. The external necrotic layer should be gently removed with a swab soaked with hydrogen peroxide. A fresh swab saturated with solution of potassium arsenite or arsphenamine in glycerin (10 per cent solution) should then be carefully applied over the diseased area. The patient may be given a small quantity of either of these preparations with instructions to apply them locally at four hour intervals. Sodium perborate has also proved effective, used frequently in saturated solution as a gargle or in cases of stomatitis as a thick paste mixed with water and followed by rinsing the mouth with warm water about five minutes later. In particularly severe cases or in those which fail to respond to local treatment within seventy-two hours, an intravenous injection of neoarsphenamine is advised. Intravenous therapy is especially indicated when there is an associated bronchitis suggesting an extension of the infection to the lower respiratory tract. Bismuth preparations, notably bismuth and sodium tartrate in 1.5 per cent glyceroximate solution for topical application and 1.5 per cent aqueous solution for intramuscular use or bismuth tartrate in the form of a salve emulsion (30 per cent), used daily, have been enthusiastically advocated by certain European and South American observers as being more sedative, less
toxic and more powerful than the arsphenamine group. Strict precautions should be urged in order to protect other members of the household from the infection.

**ACUTE LARYNGITIS**

The therapeutic indications in acute laryngitis require the control of inflammation, the release of spasm (which so commonly characterizes this malady in early childhood), and the relief of obstructive dyspnea. The latter symptom is of course limited to severe infections and may require intubation or tracheotomy. The possibility of laryngeal diphtheria must be carefully investigated in all cases. The closed lymphatic system of the interior of the larynx limits absorption and accounts for the relatively mild constitutional reaction that is commonly present.

Complete rest in a warm room with even, moist temperature (70 F.) is essential to prompt control of the infection. Vocal rest also is important. Steam inhalations to which compound tincture of benzoil (1 teaspoonful to a pint of water) is added constitute the most helpful local treatment. Menthol (0.65 Gm.) may be similarly employed (prescription D). These may be given directly at three hour intervals and a steam kettle should be kept going constantly in the room. A Vroup tent is most effective in young children. Hot applications are beneficial, especially when a tendency to spasm is present. Cold applications may be soothing in adults when tenderness over the larynx is noted. Irritative cough should be controlled by small doses of codeine sulfate. Small doses of phenobarbital are also of value in young children. When laryngeal spasm is present (croup), relaxation may be further aided by the use of eumetics. For a child of 2 years, for example, syrup of ippecac, one-half teaspoonful every fifteen minutes until vomiting occurs, is the safest drug. Smaller doses (5 drops every two hours) may help to reduce the recurrence of spasm without causing emesis. Concomitant infection in the nose or throat requires an appropriate local treatment. The diet should be light and fluids should be forced freely. Swabbing of the larynx may cause alarming spasm and should be avoided.

Chronic hoarseness should never be treated by the general practitioner. A serious lesion may otherwise pass unrecognized with disastrous results.

**DISEASES OF THE EAR**

Few ear conditions are suitable for treatment by the general practitioner. In acute external otitis (boils) the external auditory canal may be gently cleaned with alcohol and then packed lightly with a narrow gauge wick soaked with aluminum acetate (diluted solution), Ichthammol in glycerin (10 per cent) or mercurial (prescriptions E, F and G). Heat should be applied as constantly as possible and gives great relief. Vaccines may be of value in recurrent cases. Fungus infections (otomycosis) are best controlled by daily instillations of a 2 per cent solution of salicylic acid in alcohol (70 per cent) together with the administration of potassium iodide by mouth. Infections caused by Bacillus pyocyanus respond to acetic acid (2 per cent solution). When earache is due to an acute catarhal inflammation of the tympanic membrane, warm drops of phenol in glycerin (from 5 to 10 per cent solution) repeated if necessary at three hour intervals for two or three doses often give relief.

**Council on Physical Therapy**

**The Council on Physical Therapy has adopted the following reports.**

**Howard A. Carter, Secretary.**

**PORTABLE BOVIE SURGICAL UNIT ACCEPTABLE**

Manufacturer: The Liebel-Flarsheim Company, Cincinnati. This unit is a simple, efficient equipment designed for electro-surgery. It is mounted in a sturdy cabinet of walnut finish. The unit has a fair gap circuit, multiple connections for operating instruments, a current selector switch, sterilizable control handles, instruments and instrument rack.

The firm submitted performance tests on this machine showing that the machine had been operated intermittently for one-half hour. The temperature rise of the transformer and spark gap was within the limits of safety established by the Council. The Council's investigator confirmed the evidence submitted by the manufacturer.

The firm has also informed the Council that this unit is identical to the Junior Bovie Electro-Surgical Unit, already accepted.

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**Fig. 1.—Portable Bovie Surgical Unit.**

**Fig. 2.—Schematic diagram of circuit.**