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The effect of a local decongestant in acute rhinitis as related to body position

Å. Geterud and H. Rundcrantz, Skövde, Sweden

SUMMARY

In different forms of rhinitis a recumbent position aggravates nasal congestion. An earlier study has shown how a recumbent position strongly reduces the effect of oral decongestants. Now the effect of a local decongestant, oxymetazolinchlorid, in acute rhinitis as related to body position has been studied by means of rhinomanometry. The effect of this local decongestant seems not to be affected by body position.

Patients with common colds, as well as allergic or vasomotor rhinitis, are well aware of the fact that the recumbent position aggravates nasal congestion. This is mainly the result of blood accumulation in the dense vascular network of the nasal mucosa due to a hydrostatic increase in the venous blood pressure (Rundcrantz, 1969).

An obstructed nose impairs the ability to condition air and is a very unpleasant condition. The risk of complications from the middle ear and paranasal sinuses might also increase with a congested nose. Thus it is desirable to combat the mucosal swelling of the nose.

For a long time locally applied alpha-adrenostimulating drugs such as epinephrine, ephedrine and naphazoline and lately also oxymetazoline and xylometazoline have been used. Long-term treatment with nose-drops containing epinephrine, ephedrine and naphazoline has had rebound effect and consequently physicians are reluctant when handling these drugs. Recently it has been shown, however, that six weeks of treatment with a modern local decongestant (xylometazoline) has no negative mucosal effects (Petruson, 1981).

Oral decongestant drugs have also been in widespread use for many years. It has been recommended in recent reports (Malm and Änggård, 1981) that the use of such drugs be reduced, since their decongestant effect is alleged to be marginal and side-effects have occurred. The decongestant effect of oral sympathomimetics on the nasal mucosa in the recumbent position is not superior to the effect of just the sitting position (Rundcrantz and Pipkorn, 1982).

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Physical exercise produces a physiological decongestion of short duration, due to excitation of the vasomotor center, which controls the circulation mainly through the sympathetic nervous system.

AIM OF INVESTIGATION

The aim of the present investigation was to study whether the decongestant effect of oxymetazoline is influenced by body position as is the case with per oral sympathomimetics.

PATIENTS AND METHOD

20 patients took part in the study - 17 male and 3 female, 18–40 years of age (mean age 21.5 years).

All the male patients were undergoing military training. All the subjects were suffering from acute infectious rhinitis with symptoms of nasal obstruction of not more than three days' duration. Before admission to the study a clinical examination was performed and the presence of mucosal congestion of the nose was confirmed.

A rhinomanometer was used in order to evaluate the nasal airway resistance (NAR). (No 1, Mercury Electronics Ltd, Scotland + X-Y writer Minigor Type R E 501, Goerz Electro, England).

Anterior rhinomanometry was performed and the recordings followed the method described by Broms (1980), which expresses the nasal airway resistance as the degree of the angle on the flow-pressure curve. Nasal patency of each nostril was evaluated and the total nasal resistance was then calculated.

The initial rhinomanometry was followed by physical exercise using a test bicycle in order to create a physiological decongestion of the nose. When the patient had achieved a stable pulse rate above 120 the exercise was discontinued and rhinomanometry was performed within 2 minutes. Subsequently 0.09 ml oxymetazoline (0.5 mg/ml Nezeril® single dose pipette) was administered in each nostril. Every other patient remained in a recumbent position and the NAR-recordings were made at 30-minute interval for two hours. The rest of the group were sitting in an upright position during the test.

RESULTS

After the physical exercise there was an expected decrease in NAR. Locally applied oxymetazoline caused an equally good reduction of NAR in the sitting group and in the recumbent group. The decongestant effect did not decrease during the two hours the investigation lasted (Figure 1).

DISCUSSION

Alpha-adrenostimulating drugs for local application to the nasal mucosa such as

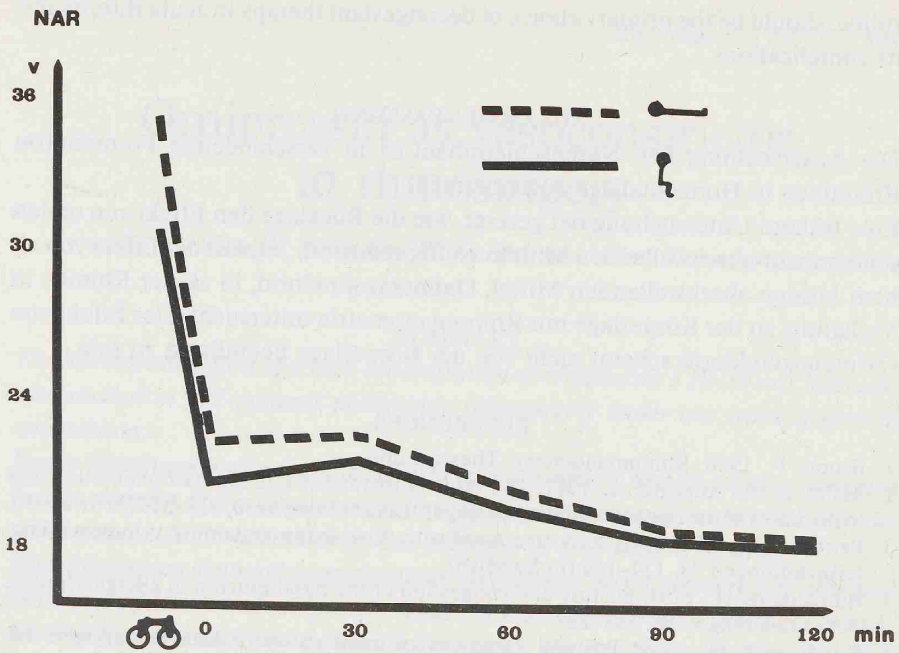

Figure 1. The initial rhinomanometry was performed with the patients sitting up in both groups. 0.09 ml oxymetazoline was administered in each nostril at the time of zero.

epinephrine, ephedrine or naphazoline give rise to rebound effects and may after some time cause an even more severe congestion often called rhinitis medicamentosa.

The introduction of oral decongestant drugs was intended to cut out such rebound effects as well as to act on mucosal areas which are not affected by locally applied drugs. However, it has been shown in recent investigations that oral decongestants do not have any positive influence on the clinical course of middle-ear infections, and their effectiveness in treating nasal disorders is limited. The decongestant effect in the common cold has also been demonstrated to be counteracted in recumbency.

The present study reveals that locally applied oxymetazoline has a pronounced effect in the recumbent position as well as when the patient is sitting up.

The fact that treatment with nose-drops containing oxymetazoline or xylometazoline for some weeks is harmless to the nasal mucosa, and that the effect remains for many hours after each application and that body position does not influence the effect, implies a revival of local decongestant therapy.

Therefore, modern nosedrops, e.g. those containing oxymetazoline or xylometa-

zoline, should be the primary choice of decongestant therapy in acute rhinitis and its complications.

ZUSAMMENFASSUNG

Die Anschwellung der Nasenschleimhaut ist in verschiedenen Formen von Rhinitiden in Horizontallage zugenommen.

Eine frühere Untersuchung hat gezeigt, wie die Rücklage den Effekt von oralen schleimhaut-abschwellenden Mitteln kräftig reduziert. Jetzt ist der Effekt von einem lokalen abschwellenden Mittel, Oximetazolinklorid, in akuter Rhinitis in Verhältnis zu der Körperlage mit Rhinomanometrie untersucht. Der Effekt von Oximetazolinklorid scheint nicht von der Körperlage beeinflusst zu sein.

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Å. Geterud, M.D.
ENT-Department
County Hospital
S-541 85 Skövde
Sweden