AFFECTION OF PARANASAL SINUSES AND VASOMOTOR RHINITIS

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In comparison with the function of nasal cavities paranasal sinuses have an essentially subordinate function. They are only a by-product in the formation of the human viscerocranium conditioned by the evolutionary process in which the relation of the viscerocranium and neurocranium is changed together with the simultaneous transformation of the upper jaw.

Owing to its close connection with the nasal cavity, from where pneumatisation begins, there appears the growing in of the nasal mucosa into the newly-formed paranasal cavities. As their role in the realisation with the function of the nose is subordinated this mucous membrane acquires a reduced form of the nasal mucosa: the epithelium is thinner, the subepithelial layer is loser with fewer cellular and glandular elements. This recession progresses towards the lateral walls, especially in the ethmoidal labyrinth and frontal sinuses.

Physiological activities, according to Caldarin, Riu and collaborators, are ventilation, ciliar activity and the protection against infection. The ventilation comes in the first place because its streaming conditions ciliar activity, which has its purposeful direction towards the ostium, having a permanent physiological function, which protects the sinuses from secondary infection.
Just as the air-pressure in the nose changes during the inspiration and expiration in positive and negative sense, such oscillations take place also in the paranasal sinuses.

An important contribution in the explanation of the normal physiology and the pathophysiology of the paranasal cavities was given by Proetz (1932), Flottes (1960) and Drettner (1965). Proetz pointed to the permeability of the sinusal ostium, from where, in normal conditions originates, the physiological cycle or, in case of occlusion of the ostium, a whole range of pathological phenomena in the mucosa of the sinuses. In the occlusion of the maxillary ostia Flottes has recommended the sinuso-ventilometry, in which the air enters under a pressure of 200 mm of water or in a special room for compression and decompression.

We are of the opinion, that in the levelling of the pressure and the opening of the ostia we should be guided, in the first place, by the fundamental pathological process, which leads to this occlusion, because there exist a whole series of pathological differential processes, which result in the occlusion of these ostia.
The mucous membranes of the nose and the sinuses react simultaneously to various noxae. There is no hyperemia of the nasal mucosa without the

hyperemia of the sinusal mucosa. This degree of reaction of the mucosa depends of the basic factor, which conditions the pathological reaction. As in vasomotor rhinitis a parasympatomimetic reaction on the mucosa is present, the oedema and the increased glandular secretion being the two essential factors.

The occurence of oedema depends on the tissue pressure or on the thickness of the mucous structure. While the mucosa of the nose is structurally much richer, the mucosa of the sinuses is looser, so that the reaction of the mucous membrane will lead to the formation of oedema, which will be much bigger than that in the mucosa of the nose. The oedema is transported through the lymph vessels which go along the middle and upper nasal meatus, and the greatest stoppage will appear just on the border between the tissues with low and high tissue pressure, that is mostly on the places where normally the ostia of sinuses are situated. Accordingly, in vasomotor rhinitis, in most cases occlusion of the ostia occurs and all the other consequences resulting from this occlusion. We know from the anatomy and the physiology of sinuses that the sinusal ostia are the most innervated placed of the mucosa. Mechanical irritations of the osia provokes the greatest pains in comparison with the same irritation on the mucosa of the nose and the sinuses. This rich innervation is the result of the coordination of the ciliary work of the sinusal mucosa, which performs a permanent transportation of the mucus towards the ostia. The result of the oedema will, sooner or later be the disturbances of the neural function and we must expect, in vasomotor rhinitis, the disorders of the physiological function of the mucosa of the sinus itself.

Consequently, in vasomotor rhinitis the fundamental pathological process is superimposed by the affection of the sinuses.

In allergy, as a process which runs for a long time as reversible attacks, these disturbances will not make their appearance so much as in non-allergic vasomotor rhinitis, which is progressive and more continual, and this, in our opinion, almost always leads to disorders of the function of paranasal cavities. We are still under the influence of old habit that only a positive punction of the maxillary sinus is the sign of infection of the sinus but very often the oedema of the mucous membrane of the maxillary sinus almost entirely obliterates the cavity of the sinus so that, according to the laws of physics, there is no place where an exudate could develop.

Since we began giving more importance to this factor we have been able, by means of sinusoskopy or by taking the smear from sinuses or by histological examination of this mucosa, to establish that even besides the negative punction there exist positive cytological, bacteriological or histological findings, mostly of maxillary and ethmoidal sinuses.

As we have already mentioned, the best way of treating such affections is to suppress the fundamental process which leads to the occlusion, in our case the oedema and the disturbance of secretion.

We are not going to speak, in this paper, of the secondary infection, because it deserves a special consideration.
Up to now we have used in such cases instillations into the maxillary sinus of cortisone, hyaluronidase and broad-spectrum antibiotics.

It goes without saying that besides this local therapy the treatment of the fundamental pathological process, i.e. of vasomotor rhinitis, comes into consideration. In case we have not achieved the desired therapeutical effect we perform the fenestration of the maxillary sinus through the lower nasal meatus and with a rubber drain through which we instillate further medicamentous treatment.

Our experiences up to now have shown that this problem of the affection of sinuses in vasomotor rhinitis, especially of non-allergic aetiology, is important and that, by this treatment, we often have good effects.

The purpose of this presentation is to call the attention of rhinologists to a very important problem in vasomotor rhinitis. There exist an additional number of details, as for instance the examination of the pressure in the sinuses, to decide, in what cases to perform the fenestration of the maxillary sinus, whether in the area of the physiological ostium or in the lower nasal meatus, interpretation of eosinophyls and mucus from the sinuses etc., all of which require further studies and experiences.

We believe that in this way we shall be able to solve best this complicated set of problems.

SUMMARY

The authors have paid attention to the disturbed function of paranasal cavities in vasomotor rhinitis. The key of such a disturbance is the occlusion of the sinusal ostia. They use the conservative treatment instilling cortisone, hyaluronidase and antibiotics into the maxillary sinus. In resistant cases intranasal fenestration of the maxillary sinus is done.

CONCLUSION

Les auteurs ont porté leur attention sur la fonction troublée des sinus paranasaux lors de la rhinite vasomotorice. Ils appliquent la thérapy conservative instillant la cortisone, la hyaluronidase et les antibiotics dans le sinus maxillaire. Dans les cas où la réaction favorable ne se produit pas les auteurs recourent à la fenestration intranasale du sinus maxillaire.

REFERENCES

1. Cottle, M. H., 1965: Chronic inflammation of nose and paranasal sinuses. Proceedings of the VIIth International Congress of Otorinolaryngology, Tokio.
2. Drettner, B., 1965: The permeability of the maxillary ostium. Acta oto-laryng., Stockholm, 60, 304.
3. Flottes, L., Clerc, P., Riu, R. and Devilla, F., 1960: La physiologie des sinus, ses applications cliniques et therapeutiques. Librairie Arnet, Paris.
4. Proetz, A. W., 1932: Some intimate studies of nasal function: Their bearing on diagnosis and treatment. Ann. Otolaryng., 41/125.
5. Riu, R., Le Den, R. and Gourlaouen: Contribution à l'étude du role des sinus paranasaux. Revue Laryng., Bordeaux, 11, 796.
6. Krajina, Z., 1967: The problem of surgery of the paranasal sinuses. Int. Rhinol., 5, 105.