

Morphological Changes in Parasympathetic Pterygopalatine Ganglionitis

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Abstract

The study of morphological changes in the pterygopalatine ganglion and the adjacent periosteum of the anterior wall of the pterygopalatine fossa was carried out on 30 fresh human cadavers with pterygopalatine ganglion sampling. In 69.69% patients with pterygopalatine ganglionitis (PPG), herpes simplex virus was detected in the tissues of the autonomic ganglion by PCR, which enables us to consider mainly the viral etiology of the disease. The morphological study of the pterygopalatine ganglion cells revealed karyolysis in neurocytes in PPG.

Keywords: Prosopalgia; Pterygopalatine Ganglion; Pterygopalatine Ganglionitis; Herpes Simplex Virus

In the clinical practice of a neurologist, dentist and otolaryngologist, the patients commonly complain of various types of facial pains, called prosopalgia [1,2,6,7,12]. Many researchers have thoroughly studied etiopathogenesis, clinical picture and treatment of facial pains [3-5,8-11,13]. Further research can justify etiopathogenetic treatment of ganglionitis of the autonomic ganglions of the head and its introduction into medical practice.

Objectives of the Study

To determine the frequency of pterygopalatine ganglionitis of viral etiology by PCR and to study the morphological changes in pterygopalatine ganglionitis.

Case Study and Discussion

The study of the tissues of the pterygopalatine ganglion was carried out by PCR to detect HSV and CMV viruses. The study of morphological changes in the pterygopalatine ganglion and the adjacent periosteum of the anterior wall of the pterygopalatine fossa was carried out on 30 fresh human cadavers with pterygopalatine ganglion sampling.

Stained histological specimens (Figure 1) were studied with the “Leica” microscopy system.

Gross specimens from a fresh human cadaver are shown in figure 2 and 3. In the center, the pterygopalatine ganglion is located directly with outgoing ganglionic branches and incoming sympathetic and parasympathetic nerve fibers. The bone and the periosteum (the posterior of the wall of the maxillary sinus) joining the pterygopalatine ganglion also look normally.

Figure 4 shows a normal morphological picture of the parasympathetic ganglion, which consists of neurons with dark nuclei and pale pink cytoplasm in the center.

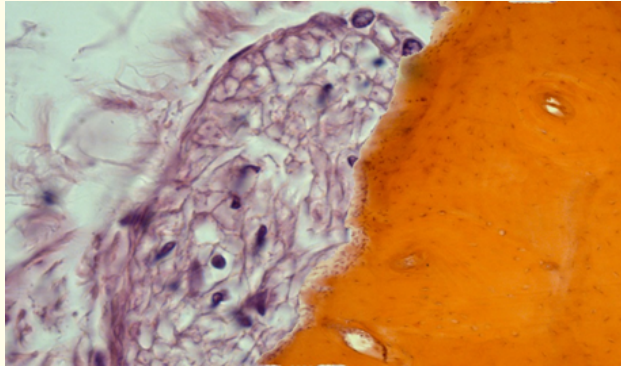


Figure 1: Normal pterygopalatine ganglion cells with a nerve.
A fragment of a bone with the periosteum adjacent to the pterygopalatine ganglion with no structural changes.
Staining with hematoxylin and eosin. Magnification 200x.

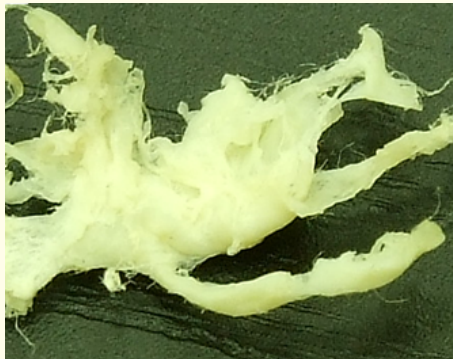


Figure 2: Pterygopalatine ganglion with outcoming autonomic branches.

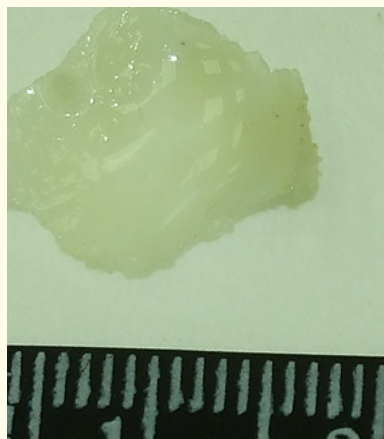


Figure 3: Bone (posterior wall of the maxillary sinus) adjacent to the pterygopalatine ganglion.

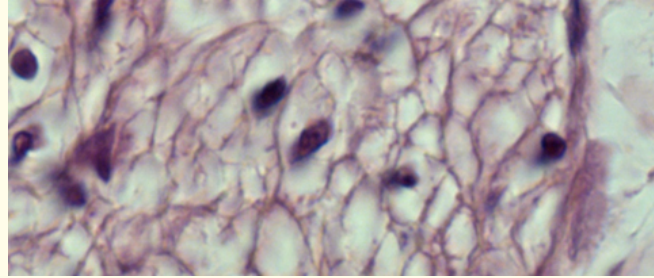


Figure 4: Normal pterygopalatine ganglion cells. Staining with hematoxylin and eosin. Magnification 400x.

After morphological analysis of the samples from 33 fresh human cadavers with pterygopalatine ganglionitis, 36 histological preparations were examined, 44 sections were made. Figure 5 shows the picture of ganglion cells which differs from the control group. The cells are of the same size. However, there are significant differences between the study and the control groups. In the study group, the cytoplasm of neurocytes is lightened in color, the nuclei have an irregular shape, some of them have pathological enlightenment in the center - karyolysis.

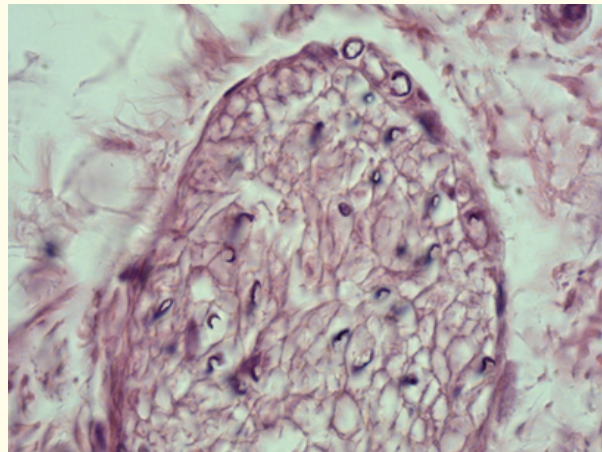


Figure 5: Pterygopalatine ganglion cells with damaged nuclei. Staining with hematoxylin and eosin. Magnification 200x.

Structural and morphological analysis in the tissues of the pterygopalatine ganglion revealed significant differences in the morphological characteristics of the ganglion tissue in the study group with pterygopalatine ganglionitis and in the control group (cadaver material).

In PCR, a positive test result - HSV was obtained in 23 patients (69.69%). In the control group, it was found in 6 cases (20.0%). This may indicate the viral etiology of PPG.

The results of our study are of practical importance providing the fundamental basis for etiopathogenetic treatment. These also allow doctors to carry out a differentiated approach when choosing therapeutic treatment, taking into account the dysfunction and the severity of the pterygopalatine ganglionitis.

Conclusion

1. In 69.69% patients with PPG, herpes simplex virus was detected in the tissues of the autonomic ganglion by PCR, which enables us to consider mainly the viral etiology of the disease.
2. Morphological examination of the ganglion cells of the pterygopalatine ganglion revealed karyolysis in neurocytes in patients with PPG.

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