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ON SCREENING OF PATIENTS WITH PRIMARY GLAUCOMA AND SOME ASPECTS OF DIAGNOSTICS OF PRIMARY GLAUCOMA IN RA

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Abstract: *The prevalence of glaucoma in RA is studied in this paper, including inherently conditioned. Frequency of symptoms of glaucoma and used instrumental methods for diagnostics of the given pathology is also studied. The efficiency of screening research of patients with glaucoma, with a glance of risk groups – age, IOP, vascular diseases, anamnestic record is shown, too. All of obtaining results provide a basis for more detailed surveys of the prevalence of glaucoma in view of climate - geographical zones and ecology.*

Keywords: *glaucoma, screening of enhanced risk, ophthalmologic researches*.

1. Introduction

Glaucoma is a term used for designation of a group of diseases, the general symptom of which is chronically progressing neuropathy of optic nerve, at the same time structural changes of DVN appear – excavation increases, defects of visual field and intraocular pressure are observed. According to literature data the average prevalence of glaucoma at the age of more than 40 is 1.6% among Europeans and 4.6% among black people.

During screening research single tonometry in healthy people is less informed, i.e. it can reveal invariably normal parameters even if there are characteristic peculiarities of primary glaucoma (changes of optic nerve and visual field).

More exact methods are still unsearchable for screening research, and traditional methods include visiometry, perimetry, tonometry and ophthalmoscopy. But if there is heredity through glaucoma, the first line must seriously be examined after the age of 40. In the absence of some change the following examination must be done every year.

The primary glaucoma progresses clinically unsuspected, unless changes of peripheral vision are observed. The injuries take place gradually. Though the disease usually progresses as a double-sided process, asymmetry is often observed, that is why changes of vision field are usually revealed in one eye, and in less degree – in the other one. Even patients being very attentive towards themselves cannot notice evident perimetritic changes, and earlier defects can be revealed only accidentally.

The main aim of the primary glaucoma therapy is prevention of abnormality of visual function during the whole life of the patient. At present the best method of achievement of this aim is considered compensation of IOP. And concrete informative parameters for the control over progressing pathologic process are visiometry, and condition of optic medium, biomicroscopy, tonometry, gonioscopy, ophthalmoscopy and perimetry – the choice of its kind depends on existing apparatus, the age of the patient and indices of visiometry. In case of change of optic medium the perimetry is done in conditions of mydriasis medicamentosus [1-5].

2. Material and Methods

Taking into consideration the importance of the given pathology a research of the disease of glaucoma in RA during 2004-2012 is done.

In the period of the research glaucoma in RA gave sharp variations.: 2004 – 1.00; 2005-0.46; 2006-0.06; 2007-10.14; 2008-6.4; 2009-4.83; 2010-34.2; 2011-5.03; 2012- 5.4. At the same time preglaucoma is revealed in 13.8%, primary – in 34.2%, developed – in 27.6%, far-gone – in 22.1%, absolute – in 2.3%.

The base for diagnosing the patients examined by us were the data of generally accepted ophthalmologic researches (visiometry, biomicroscopy, gonioscopy, tonometry, tonography, perimetry, ophthalmoscopy).The complaints that had these patients were lowering of the sharpness of sight, dimming of the sight in the mornings, appearing iridescent circles when looking at light, quick progressing of presbyopia. The disturbance of hydrodynamics were in the limits: PQ more than 20 mm mercury column, C-0.14 and lower, F-1,5 and less, CB – more than 100.

For pathology in the visual field peripheral limits constriction was accepted more than 5^o by one or several meridians, availability of microscope in central part of visual field, any increase of boundaries of blind spat in comparison with the initials. While doing ophthalmoscopy the following data were taken into consideration: dilation of physiological excavation of DVN, bleaching of DVN, shift of vascular fascicle to the nose side, atrophy and excavation (marginal) of DVN.

Our research also included the study of family anamnesis of patients, those who had had hospital treatment within eight years, besides, 217 patients (17.4%) out of the total number of examined patients are revealed (1583 individuals) with aggravation among total number of patients with primary glaucoma.

The symptoms of existence of hereditary predisposition were small front camera, narrow corner of front camera, strengthening the pigmentation of corneoscleral trabecules, dystrophic changes of iris, including pseudoecofoliation on the edge of the pupil of the eye and on front capsule of lens, dimming the reaction of the pupil towards light, lenticular opacity of different degree.

The study of anamnestic and clinical data among patients examined by us with aggravation brought to the conclusion that glaucoma is inherited by multifunctional type, characteristic for both diseases of hereditary predisposition, it gave a chance to consider that glaucoma is genetically a determined, not a monogene hereditary disease, but rather polygene, i.e. a disease with a hereditary predisposition. In the light of modern ideas of medical genetics of our material, and also considering the opinion of some authors, who think that there exist genetic and hereditary factors predisposing the development of glaucoma, however, exact

mechanisms, bringing to its origin, aren't ascertained yet, the role of genetic hereditary is difficult, predisposition is conditioned by the influence of many genes and in the absence of other risk factors, the disease may not be revealed. And we consider such an idea nearer to the reality. Among the relatives of examined patients glaucoma is met oftener than among usual people. And that is why they must be examined systematically with the purpose of exposure of earlier stage of the disease.

3. Results and Discussion

Ther main quantity of people with glaucoma are those of old age. That's why we confined ourselves to research the genealogy of three generations:

I. Parents of the examined patient,
II. The examined patient, his brothers and sisters,
III. Children of the examined patient.

While examining the genealogy with age distribution we have noted, that men get this disease earlier, than women. However, mothers oftener are transmitters of heredity. In research of the total number of genealogically examined patients (the patient, his parents, brothers and sisters), in 217 (17.4%) cases genealogically conditioned glaucoma is revealed, in 89 (41%) cases transmitters of disease were mothers, and in 82 (37.7%) patients – fathers.

While examining the second generation of the patients, it is revealed almost the same frequence of disease (brothers – 22 cases (10.1%), sisters – 21 cases (9.6%).

Out of 82 cases (37.7%) the fathers' diseases were passed to 42 men and 40 women. The latter is indicative of the fact, that the man who has glaucoma, it nearly equally passes on sons and daughters.

As to 89 women (41%) with glaucoma – mothers of patients – in 39 cases (43. 8%) the disease hereditarily appeared in sons, and in 50 cases (56.1%) – in daughters, i.e. in this case we can talk with confidence about the fact, that in case of having glaucoma the greater probability is observed in its passing to female line genealogically. Though, totally, the number of men patients with glaucoma prevails over the women-patients.

While examining genealogically the second generation, some equilibrium is observed between the number of patients with glaucoma – those of brothers and sisters. The sisters of the patients generally inherit the disease from mothers. In revealing the disease in the second generation we can confidently speak if not about the inherited disease, but about reliable inherited predisposition to this disease, which can be revealed reaching the appropriate age. Proceeding from the data of our researches, we consider it necessary, in detection of the mentioned disease to take the relatives under the control of the doctor - ophthalmologist.

Out of 217 individuals with aggravation only three children had glaucoma. However, it must be noted that the examination of inherent youth glaucoma isn't included in the frames of the present theme.

Our researches let us only state the data, do some suppositions and conclusions. That is, first, the necessity of systematic examinations of presence of glaucoma of close relatives of the examined patients, as in that case it is possible to expose the earliest stages of the disease. Such a direction of prophylactic examinations promotes less danger of the disease, as the examinations aren't limited by age.

In researching the disease incidence of glaucoma of the mentioned contingent of patients there was also revealed the presence of somatic diseases and

combination of glaucoma with other ophthalmopathology. In addition there were diagnosed with hypertension – 26.2% of patients, ischemic disease of heart – 9%, insular diabetes – 16.1%, and other somatic diseases
were also noted. Such a combination of glaucomatic process with vascular diseases gives reason to agree with the opinion of those authors (Nesterov A.P., 1982), who mentioned, that up to now there haven't been firm evidences of causal dependence between primary glaucoma and other diseases or of direct participation of the latter in pathogenesis of glaucomatous process. The existence of common reasons, that call forth diseases in people of old age, including glaucoma, isn't excluded.

Finally, 42.6% of examined individuals had signs of other ophthalmopathology. Those are: anomalies of development of eyes, traumas of eye ball, residual phenomena of old uveitis, cataract (congenital and age-specific), lesion of retinal, vascular membrane and visual nerve, myopia, astigmatism.

Glaucomatic symptoms and frequency of usage of instrumental research for diagnostics are studied in the article.

A) Depending on the gender (1) – as you can see in the table 1.

Table 1

Distribution of glaucomatic symptoms and used diagnostic methods depending on the gender of patients in RA during 2004-2012 (in %)

Gender / Symptoms	Men	Women
Pains in the eye	5.40	6.36
Lowering of sight	13.80	14.07
Iridescent circles	1.64	2.10
Intraocular pressure	13.24	13.10
Tonography	12.77	12.89
Biomicroscopy	11.14	11.48
Ophthalmoscopy	7.26	6.49
Vision field	13.82	14.02
Gonioscopy	8.42	6.56

The data brought testify that certain symptoms of glaucoma are met both among women and men approximately equally. Instrumental researches are used almost with the same frequency.

B) Changes of glaucomatic symptoms and used research methods during the years of the research. Retrospective analysis shows, that during 2004-2012 glaucomatic symptoms was noted, but not with the same frequency, as you can see in the table 2.

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Table 2

Frequency of glaucomatic symptoms of patients and used diagnostic methods in RA during 2004-2012 (in %)

Years Symptoms	2004	2005	2006	2007	2008	2009	2010	2011	2012
Pains in the eye	22.0	22.8	00.0	44.8	66.6	88.7	55.7	44.8	66.5
Lowering of sight	113.8	112.0	55.9	112.7	113.3	115.3	114.1	113.7	116.6
Iridescent circles	00.4	11.9	00.0	00.9	55.2	33.6	00.7	11.2	11.3
Intraocular pressure	113.8	112.0	55.9	112.4	112.7	114.5	112.8	112.7	114.5
Tonography	113.4	113.0	55.9	112.9	112.0	113.8	112.8	112.4	113.4
Biomicroscopy	88.3	112.0	00.0	113.4	110.1	44.9	111.9	112.4	111.9
Ophthalmoscopy	99.1	113.0	55.9	55.5	55.1	33.9	77.9	99.6	110.4
Vision field	113.8	112.0	335.3	116.4	115.7	114.9	114.9	114.8	00.5
Gonioscopy	111.8	88.3	117.6	88.4	77.4	66.4	66.6	66.3	111.9
Daily IOP	113.8	113.0	223.5	112.7	111.9	113.9	112.6	112.1	113.0

More often on the assumption of subjective sensation there was lowering of sharpness of sight. It practically didn't give special variation during the whole period of research. Among diagnostic methods tonometry, as well as tonography, perimetry, gonioscopy, ophthalmoscopy and biomicroscopy were used, as you can see in figure 1.

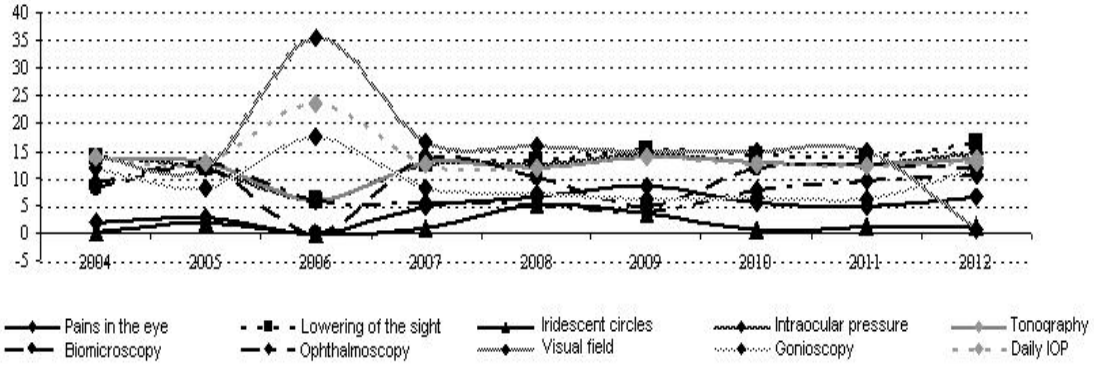

Figure 1. Dynamics of revelation of certain symptoms of glaucoma and diagnostic methods used in RA during 2004-2012 (in %)

4. Conclusions

We can draw the following conclusions: for diagnosing "glaucoma" the complaints of the patients were considered and always instrumental methods of reaearch were used. In plan of principle particular deviations in the frequency of use of diagnostic methods aren't noted. Their main set is generally

accepted. Taking into account the aforesaid and also proceeding from the fact, that screening examination of asymptomatic patients is lately especially stressed, with the purpose of revelation of early stages, as always there exists the best prognosis at the early beginning of treatment. But at the same time it must be mentioned, that small total prevalence of the disease brings to economic non-efficiency of screening0 examination of a large group of population. Groups of high risk must be exposed to screening. The main factors of glaucoma risk are the age, high IOP, miopy, heart-vascular diseases (arterial high pressure, angiospasm), diabetes and anamnestic record.

We have also made an attempt to establish patterns and relationships between the external environment and the human body and in our opinion within specific geographic areas and ecology, these effects can be specifically. All of this provides a basis for more detailed surveys of the prevalence of glaucoma in view of climate - geographical zones and ecology.

Study the dependence of the spread of glaucoma on the mineral composition of drinking water, soil composition, ecology and other physical - geographical features we could not establish. In this regard, requires new research on a number of areas of Armenia.

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