FACULTAD DE CIENCIAS
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ESTUDIO DE LAS INHOMOGENEIDADES ESPACIALES EN LA SENSIBILIDAD AL CONTRASTE DE SUJETOS PATOLÓGICOS MEDIANTE EL CAMPÍMETRO ATD DE DOBLE MODULACIÓN

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ABSTRACT

1. PURPOUSE: Identify relationships between impairments in colour vision, contrast sensitivity and visual field, and the progress of visual dysfunctions. We want to determinate the pattern, which the different pathologies produced in the results of the ATD campimeter. To establish a future bases, to be used in the screening and follow-up of the different diseases. And with this, predict the progress of the visual dysfunction, and try to prevent or relieve it.
2. METHODS: On one hand, colour vision was evaluated with the Fansworth-Munsell 100-Hue test and the Isihara test. On the other hand, the visual fields sensitive measures was made with the ATD perimeter; for the spatial frequencies of 0, 0.5,2 y 4 and the temporal frequency was always 0. Of course, we took these measures for the three visual channels: A (achromatic), T (chromatic red-green) and D (chromatic blue-yellow).

   The advantage of the ATD campimeter, with regard to the other kinds of perimeters, is that you can analyze the CSF in 21 different points of retina (including fovea), in the three visual channels (A, T and D).

   We took to patients with retina abnormalities, in an arbitrary way. One of them, have an optical neuropathy, and the other have a hypertensive retinopathy.

   For the control group, we took, two normal subjects (in an arbitrary way too), without any disease and with a normal visual acuity. Of course, all patients (pathological and normal) were wearing their correction if they needed it.
3. RESULTS AND CONCLUSIONS: We finally verify that both pathological persons, have abnormalities CSF, in all the analyzed channels (chromatics and achromatic). We could see that these abnormalities get worse in the person that has a more serious pathology, which has been established for longer.

   Because, if we observe the obtained results, we see that the pathological patient 1, has all the CSFs altered in all the channels, especially in the frequency of 4 cpg in the channel T. It is in this channel, where he presents the worst sensibilities in all the frequencies. In the channel D, we also find low values to the frequencies of 2 and 4 cpg. In addition, there is verified that the fovea results are worse than expected, and the maximum sensibilities are displaced towards the bottom visual field, for almost all the frequencies.

   In the pathological patient 2, however, we found some parameters that can be considered similar to normal. And the differences, regarding the control group, can not be

considered as important as the abnormalities in patient one. And we also know that patient one, has a more serious disease and the pathology began a long time ago.

Another aspect to note, is that in three studied cases (including the average subject), we see that the frequency of 4 cpg is impaired. This adds to the fact that usually appears a recovery in the highest frequency, in all channels and spatial positions, which makes us to consider that this behavior should be studied in greater detail. But we have to consider, that we only took two persons to make the control group, because we lacked a pattern of these cases.

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5. CONCLUSIONES

Hemos podido comprobar que las dos personas con patologías estudiadas, tienen las sensibilidades al contraste alteradas tanto en los canales cromáticos como acromáticos analizados.

También hemos comprobado que cuanto más grave sea la patología, y más tiempo lleve instaurada, los problemas apreciados son mayores. En el paciente 1, con neuropatía óptica hereditaria asociada a la enfermedad de Leber, se han detectado muchas más anormalidades que en el paciente 2, con retinopatía hipertensiva, siendo la patología del primero mucho más grave, de peor pronóstico y llevando más años instaurada.

Si observamos los resultados obtenidos, vemos que el paciente patológico 1 tiene todas las CSFs alteradas en todos los canales, sobre todo en la frecuencia de 4 cpg en el canal T. En este canal es donde presenta las peores sensibilidades en todas las frecuencias. En el canal D también hallamos valores bajos a las frecuencias de 2 y 4 cpg. Además, se comprueba que en la fóvea la calidad visual es peor de la esperada y que las máximas sensibilidades se encuentran desplazadas hacia el campo visual inferior, para casi todas las frecuencias.

En el paciente patológico 2, en cambio, hallamos unos parámetros que podemos considerar parecidos a los normales. Aunque bien es cierto que existen diferencias respecto al sujeto promedio, no las consideraremos de tanta relevancia como en el paciente patológico 1. El comportamiento de la fóvea es el esperado, resultando presentar mejor calidad en general que en el resto de localizaciones espaciales. Encontramos los valores más bajos de sensibilidad en las frecuencias de 2, 4 y 8 cpg en el canal D, y para las frecuencias de 4 y 8 cpg en el canal T.

Otro aspecto a resaltar, es que en los tres casos estudiados (incluido el sujeto promedio), vemos que la frecuencia de 4 cpg está alterada, en mayor o menor medida, llegando a presentar valores de sensibilidad cero en función de la patología y sobre todo para posiciones excéntricas (a partir de 10º). Esto se une al hecho de que generalmente aparece un repunte a la frecuencia más alta en todos los canales y posiciones espaciales, lo que hace que nos planteemos que este comportamiento debe ser estudiado en mayor detalle. Tampoco perdemos de vista el hecho de haber utilizado como sujeto de comparación el promedio de dos sujetos normales, al no disponer de un patrón para estos casos, lo que sería deseable.

CONCLUSIONS

We finally verify that both pathological persons, have abnormalities CSF, in all the analyzed channels (chromatics and achromatic). We could see that these abnormalities get worse in the person that has a more serious pathology, which has been established for longer. In addition, we have identified more abnormalities in patient 1 than in patient 2, being the first condition more serious, with a worse prognosis and being established for longer.

Looking at the results of the pathological 1, we could see that she has altered all the CSFs, in all the channels, especially in the frequency of 4 cpg in the channel T. It is in this channel, where he presents the worst sensibilities in all the frequencies. In the channel D, we also find low values to the frequencies of 2 and 4 cpg. In addition, there is verified that the fovea results are worse than expected, and the maximum sensibilities are displaced towards the bottom visual field, for almost all the frequencies.

In the pathological patient 2, however, we found some parameters that can be considered similar to normal. Although there are differences with the control group, there are not as relevant as those found in patient 1. The fovea behaves as expected, showing better quality than the rest of spatial locations. We found the lowest sensitivity at frequencies of 2, 4 and 8 cpg in the channel D, and for frequencies of 4 and 8 cpg in the channel T.

Another aspect to note, is that in three studied cases (including the average subject), we see that the frequency of 4 cpg is impaired, to a greater or lesser extent. It event reach zero sensitivity values, depending on the pathology and especially for eccentric positions (from 10 º). This adds to the fact that usually appears a recovery in the highest frequency, in all channels and spatial positions, which makes us to consider that this behavior should be studied in greater detail. But we have to consider, that we only took two persons to made the control group, because we lacked a pattern of these, which would have been desirable

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