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A Review of Glaucoma

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ABSTRACT:-

As the human life span increases, age-related health problems, including neurodegenerative diseases, continue to increase. Regardless of genetic or environmental factors, many neurodegenerative conditions share common pathological mechanisms, such as oxidative stress, a sign of many age-related health burdens. In this review, we describe oxidative damage and mitochondrial dysfunction in glaucoma, an age-related eye disease that affects 80 million people worldwide. Glaucoma is an incurable disease that shows symptoms when it is severe, leading to slow vision loss or irreversible blindness. Early diagnosis allows for early treatment of patients. In glaucoma screening, retina images are very important as they allow for the detection of early glaucoma lesions, which usually begin with a cup formation in the optic disc (OD). In clinical settings, practical indicators such as the Cup-to-Disc Ratio (CDR) are often used to assess the presence and stage of glaucoma. to help diagnose glaucoma mass, reduce costs and allow it to be extended to more people. With DL methods in OD separation and optic cup (OC), it is possible to assess the presence of glaucoma in a patient quickly based on cup formation in OD, using CDR. In this work, the contribution of the Multi-Class and Single-Class Glaucoma Classification Methods is explored using 3 types of CDR. U-Net architecture is trained using transmission learning models (Inception V3 and Inception Reset V2) to differentiate OD and OC and evaluate glaucoma prognosis based on different types of CDR indicators. The models are trained and tested in a well-known public database (REFUGE, RIM-ONE r3 and DRISHTI-GS). Glaucoma is an incurable disease that shows symptoms when it is severe, leading to slow vision loss or irreversible blindness. Early testing allows for early treatment of patients this testing.

Introduction: -

Glaucoma is a disease that has no neurodegenerative symptoms, which is incurable and incurable when the optic nerve is slowly damaged. It is considered to be the second leading cause of blindness worldwide, with approximately 60 million people in 2010 [1]. The incidence of undiagnosed glaucoma is as high as 50% even in high-income areas such as North America and Australia, increasing to 90% in low-income regions such as Asia and Africa, as a result of the unavailability of diagnostic tools and diagnostic techniques. theseglaucomaous lesions. The Cup-to-Disc Ratio (CDR) indicator, which is the most commonly used indicator for glaucoma, is a method that calculates between a cup and a straight disc [3], [4]. Computer-assisted diagnostic solutions for glaucoma are needed in situations such as mass screening and medical care, and even more so in countries with a severe shortage of qualified specialists [5].

Learning methods (DL) based on the automatic separation of OD and OC for glaucoma. Tubal removal has been used both after failed glaucoma surgery and in patients with complex cases of secondary glaucoma, which puts them at greater risk for failure with trabeculectomy. Considering the growing number of surgical tools in our toolbox, choosing which tool a patient can choose for a glaucoma surgeon, remembers many other important factors, including the type and type of disease, surgeon information, availability. of different devices, and recovery issues.

Ways: -

Learning Design and Population: - In this prospective study, we developed and evaluated a different compensation model using more than 3957 OCT scanners from healthy participants (Fig. 1, objective 1). We then evaluated the effectiveness of our novel approach to healthy participants associated with 387 years of age and 387 patients with glaucoma (Figure 1, goal 2). All subjects complied with the principles of the Helsinki Declaration and were approved by the SingHealth Centralized Institutional Review Board. Informed written consent was obtained from all participants.

In this work, diagnostic methods for glaucoma based on differentiation are explored. The pipeline used for this function is described in Fig.1

Ocular Tests: -

Participants obtained visual acuity measurements using the log-arithm of small angle chart (Lighthouse), autorefractionkeratometry (Canon RK-5 AutorefractorKera-tometer; Canon, Inc), 25 and axial length measurement (IOL Master version 3.01; Carl Zeiss Meditec AG) Singapore Eye.Research Institute.26 Spherical equations are calculated as the round value and the fraction of the negative cylinder value.

Automatic Variable Releases: -

We automatically extracted several variables using MATLAB (MathWorks, Inc) and separated the retinal vessel tree from the OCT volume.18 Combined all vessels within the range band around the center of the optic disc, from 3.28 to 3.64 mm became a. 256-sector retinal density.27 Optic disc variables including position, orientation (angle between horizontal axis and large axis of optic disc), and measurement (quotient between large and small axis) extracted from OCT.

Compensation Model Development: -

With the development of the experimental database, we randomly distributed (6: 4) the development database (n ¼ 1619 participants with 2389 eyes) and the experimental database (n ¼ 1080 participants with 1568 eyes; Fig. 1). We have divided the databases at the participant level to ensure that there are no overruns.

data from the same person across all 2 data sets. Racially, no differences were found between development data (Chinese, n ¼ 646 [39.9%]; Indian, n ¼ 552 [34.1%]; Malay, n ¼ 421 [26.0%]) and sets of test data (Chinese, n ¼ 430 [39.8 %]; Indian, ¼ 367 [34.0%]; and Malay, n ¼ 283 [26.2%]; P ¼ 0.993). We used multivariate line regression to compensate for RNFL density of 8 variables: age, refractive error, optic disc (location, orientation, and ratio), fovea (distance and angle) , and retinal vessel congestion.18 Model selection is made by reducing Akaike information criteria.

Significance: -

There are several things that come to mind when deciding which procedure to choose:-

Type of glaucoma Status angle (small, closed, open) Lens condition (phakic, cataract, pseudophakia, aphakia) Rate of glaucoma pre-surgery IOP Target IOP Response (myopia, presbyopia) Surgery ocular past and ocular comorbidities Availability of resources Recovery problems.

ORGANIZED SYSTEM: -

This route is usually chosen when the patient has an uncontrollable disease under high-tolerance treatment, and after a possible examination of selective laser trabeculoplasty (SLT) if indicated. Surgery under this group is often able to bring intraocular pressure (IOP) to lower youth rates, which makes them a better choice for advanced disease that requires less targeted compression, as well as for patients with high preoperative IOP.

Conclusion: -

Along with clinical data and visual field testing, CDR is a widely used parameter in tests to analyze and diagnose glaucomatous papilla, for this purpose CD-based classification methods were used. OD segregation is easier than OC segregation, which is often difficult to define boundaries that make it difficult for nurses to perform this task. Therefore, for this reason, CNN proves that it is already a good help to simplify independent and challenging work that relies heavily on the experience of an ophthalmologist. . Drug delivery systems also show continuous drug delivery time, improved efficiency, and flexibility, as well as a controlled release rate and time. As one of the most important indicators, IOP can be measured by devices installed locally. an eye for a small invasive inclusion.

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