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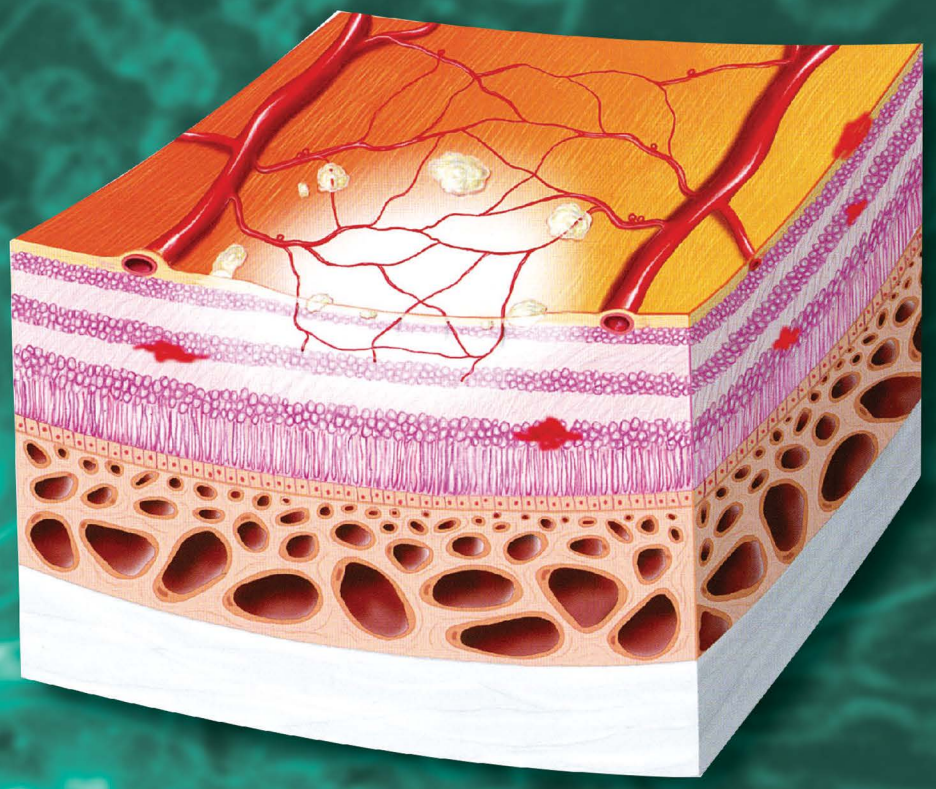
DIABETIC RETINOPATHY



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Contents

CHAPTER 2

Diabetic Retinopathy

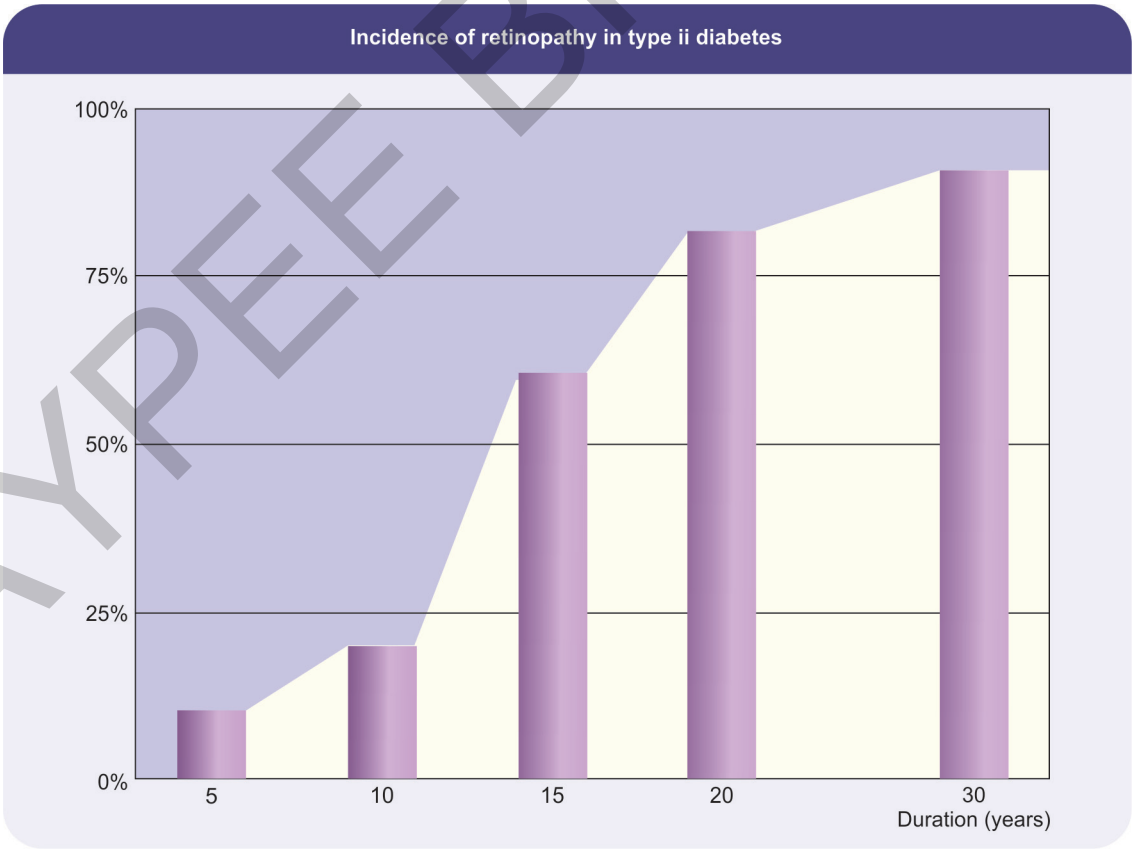
INCIDENCE AND PREVALENCE

Diabetes is one of the main causes of blindness in industrialized countries and also of severe loss of vision in the working population. In most industrialized countries, 4% of the population is affected by diabetes.

Up until a few years ago, diabetes was broken down into:

- *Type 1*, insulin-dependent, generally found in younger individuals, usually due to pancreatic lesions
- *Type 2*, non-insulin dependent found above all in older patients. It is often hereditary.

At present, the classification used is the one described in Chapter 3.



PREVALENCE

The prevalence of diabetes in industrialized countries is estimated to run at 3-4% of the population and it increases with age. About 1 case out o 10 is affected by diabetes Type 1. Furthermore it is estimated that between one-third to half of the cases of Type 2 diabetes is not diagnosed because it is asymptomatic. According to the projections of the World Health Organization (WHO) the cases of diabetes in Europe will double by 2025 in reason of the increase in such risk factors as ageing of the population, sedentariness and unhealthy diets.

30-50% of the diabetic population has retinopathy and every year 1% is affected by severe forms of the disorder. The main risk factors associated with earlier onset and a more rapid progression of Diabetic Retinopathy are:

- Duration of the diabetes;
- High blood sugar levels
- Arterial hypertension

The proportion of Diabetic Retinopathy in individuals with diabetes mellitus is some 30% after 10-20 years of progression. This proportion increases progressively with the duration of the diabetic disease.

Of these individuals 10% has proliferative retinopathy that may rapidly lead to blindness. Also non-proliferative retinopathy (that affects 90% of cases) is responsible for a serious loss of visual capacity in a large proportion of individuals with this disorder.

In the industrialized countries, between 4% and 15% of the cases of blindness are diabetic persons. In the rest of the diabetic population retinal lesions will appear during the evolution of the disease in almost all the cases. Non-proliferative retinopathy is observed more often in the cases where diabetes started in adulthood, whereas proliferative retinopathy is present generally, but not always, in the juvenile forms of the disorder. The two forms are related to the duration of the general disease and are found more often if diabetes is not properly controlled.

Retinal alterations may appear as early as five years from the onset of the disease and are frequently found in patients who have had diabetes for more than 10 years. After 10 years of progression, 20% of the individuals present retinal lesions, 60% after 15 years , and 90% after 30 years 90% of the individuals are affected by Diabetic Retinopathy.

However, there is a very small proportion of diabetic individuals who will never develop retinal disorders.

EPIDEMIOLOGY

Diabetic Retinopathy is the most important complication of diabetes mellitus affecting the eye, and in industrialized countries it is the leading cause of Legal Blindness among working-age individuals. The symptoms related to it often appear in the later stages of the disease when the lesions are already advanced, thus impairing the efficacy of treatment. In developing countries Diabetic Retinopathy is increasingly among the causes of Legal Blindness and of low vision in working-age adults.

At least 30% of the diabetic population has retinopathy, and every year 1% is affected by the severe forms of the disease. The main risk factors associated with the earlier onset and more rapid progression of retinopathy are: duration of diabetes, impaired glucose metabolism and bad control of arterial hypertension, where present, and concomitant dyslipidemia. Even though high blood sugar levels are implied in the onset and progression of Diabetic Retinopathy, often hypoglycemia is of critical importance. In addition another critical factor is the susceptibility of genetic factors that account for variations in incidence and progression of retinopathy.

PROGNOSIS

An important aspect to be emphasized is that proliferative Diabetic Retinopathy is a severe life-threatening disorder. 25% of individuals affected die in the first two years after onset and 50% die in the following 5 years.

TREATMENT

At present there are well coded treatment modalities that make it possible to prevent the loss of vision and also blindness caused by Diabetic Retinopathy. Hence it is indispensable to understand the pathogenesis of this disorder and how it evolves so that antiangiogenic therapy and photocoagulation treatment may be started as early as possible.

DIABETIC RETINOPATHY

The aim of this concise manual on *Diabetic Retinopathy* is to give, in its first part, to clinical ophthalmologists, residents in ophthalmology, medical students, optometrists, specialized technicians and specialized nurses, the basic information on epidemiology, pathogenesis and classification of diabetic retinopathy.

The second part of the handbook shows how to read, interpret fluorescein angiography, classic cross-section OCT, 'en face' OCT, and the most recent OCT angiography, documenting and diagnosing the different features of background, nonproliferative and proliferative diabetic retinopathy.

It will guide the basic ophthalmologists, residents and technicians to understand diabetic retinopathy with most recent typical and atypical aspects of imaging and modern treatment. This handbook will also help develop understanding in fluorescein angiography, OCT and OCT angiography in clinical work. It will show the practical interest of clinical imaging and treatment in everyday ophthalmology.

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