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Diabetic Retinopathy

Tara L. Smith

Otterbein University, tsmith@otterbein.edu

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Diabetic Retinopathy

Tara Smith RN, BSN

Otterbein University, Westerville, Ohio

Introduction of Process

- Diabetic retinopathy (DR) is one of the most common complications and continues to be a major cause of preventable blindness in the United States
- The amount of people with diabetes is projected to increase by 54% in 2030 compared to 2010 and as a result, the risk for DR consequently increases (Liyan et al, 2016)
- The prevalence of DR differs with the length of time the patient has had diabetes
- About 10 years into the disease, prevalence increases 40-50% (Hassan, Bong, & Premseenthil, 2012)
- The major risk factors for DR are hypertension, poor glycemic control, age, and duration of diabetes
- Although complications of DR are reduced with tight glycemic control and blood pressure control, many patients with diabetes continue to develop complications of DR (Liyan et al, 2016)
- People with diabetes are twice as likely to develop glaucoma and cataract

Signs & Symptoms

- All patients with diabetes experience signs and symptoms at some point due to the pathophysiological process and the fact that the retina is so vascular
- The symptoms usually effect both eyes and become clinically identifiable in the advanced stages of the disease
- Symptoms may start slow and gradual decrease in visual acuity, spots or floaters, blurred vision, metamorphosis, impaired color in vision, fluctuation vision, and may escalate to vision loss
- Most patients get an eye exam at the time of diagnosis of diabetes
- Patients also follow up with an optometrist yearly for an eye exam and dilation of the fundus
- Signs upon eye exams include microaneurysms, micro hemorrhages, retinal edema, cotton-wool spots, venous loops or bleeding, capillary remodeling, and macular edema
- During pupil dilation, patients are also measured with tonometry to measure pressure inside the eye
- Optical coherence tomography (OCT) is also completed and assesses the tissue inside the eye for damage

Non-proliferative vs. Proliferative Diabetic Retinopathy

- Non-proliferative Diabetic Retinopathy:
 - Symptoms may be mild or nonexistent
 - Blood vessels and retina are weakened
 - Microaneurysms may begin to form and begin to leak
 - Edema may begin as a result to leakage
- Proliferative Diabetic Retinopathy:
 - Considered the more advanced stage of DR
 - At this stage ischemia begins to evolve
 - More weakened blood vessel form and fill the eye
 - Ischemia causes vision loss due to lack of oxygen

DIABETIC RETINOPATHY

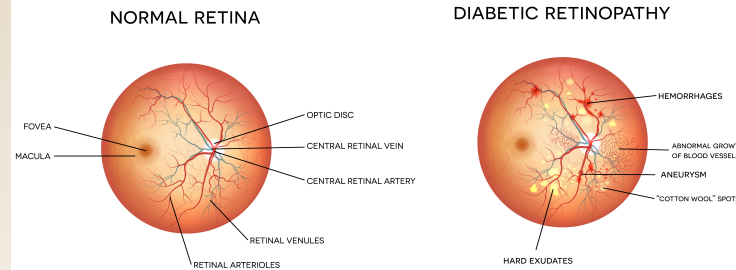


Table 1. Above is an illustration of the difference between a normal appearing retina and a retina effected by diabetic retinopathy.

Pathological Process

The underlying cause of DR roots to diabetic microvascular complications. After time, hyperglycemia prerequisites for vessel leakage due to increased microvascular permeability, and microaneurysm formation. As the disease progresses, endothelial cell hyperplasia forms and pericyte degenerations occurs. As a result, acellular capillaries intervene, decreasing blood supply and consequently, ischemia occurs and growth of fragile and leaky blood vessels leads to severe vision loss (Matteucci et al., 2015).

According to Matteucci et al. (2015), it is now apparent that the neuroglial components of the retina are affected before any retinal vasculature is involved. This deliberation stems from observation that deficits of the neural retina may be found in absence of retinal microvessel damage, although it cannot excluded that damage to the vasculature may have already began at a microscopic level before noticeable signs of leakage or hemorrhage.

Nursing Implications

The significance in the pathophysiology surrounding DR plays a role when treating the disease itself. Most common treatment is to maintain normal glucose levels and minimize hyperglycemia. All microvascular issues in the eye are solely related to leaky vessels and are ultimately caused by hyperglycemia (Matteucci et al., 2015). After attempting to prevent the cause, patients can typically receive laser treatment before the retina is severely damaged. Patients can also receive injections of corticosteroids or anti-VEGF (vascular endothelial growth factor) into the eye to help shrink new blood vessels and aid with inflammation (Titchenell & Antonetti, 2013).

Like most circumstances, nurses play a vital role in education. First and foremost, nurses should educate the diabetic population to take medications as prescribed, stay physically active, and eat a nutritional diet. These three components of a healthy lifestyle will help control diabetes and as a result, slow down the progression of DR. Lastly, nurses can help make recommendations to low vision and rehabilitation services and suggest strategies that may help make the most of the remaining vision.

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