MODULE 7.6
Symptoms and Onset of DME

All patients with diabetes are at risk for diabetic macular edema (DME), which can develop at any stage of diabetic retinopathy (DR). Onset of DME is usually insidious and without pain. Early stages may be asymptomatic. The defining feature of DME is edema of the retina, and it manifests with blurring of central visual acuity. Fluid in the macular area tends to coalesce in the central avascular fovea, resulting in reduced vision. The more fluid accumulates in and under the retina, the worse the visual acuity becomes, and severity of vision loss can range from mild to profound.[1,2]

DME is seen clinically as thickening of the layers of the retina. It results from abnormal accumulation of fluid within and beneath the retina because of imbalance between capillary and vascular hydrostatic forces and oncotic pressure gradients between plasma and tissues.

Edema can be classified as focal or diffuse according to the distribution of fluid although the delineation between these types of distribution has been controversial. Clinically significant macular edema (CSME), as defined by the authors of the Early Treatment Diabetic Retinopathy Study,[3] exists if any of the following criteria is met:

- Any retinal thickening within 500 µm of the foveal center
- Hard exudates within 500 µm of the foveal center associated with adjacent retinal thickening (which may lie more than 500 µm from the foveal center)
- An area of retinal thickening at least 1 disc area in size, any part of which is located within 1 disc area of the foveal center

A DME severity scale set forth by the Global Diabetic Retinopathy Project Group classifies DME as mild, moderate, or severe.[4] based on the distance of retinal thickening or hard exudates from the fovea.[4]

References

1. Schlottman PG. Diabetic macular edema (DME): overview of etiology, diagnosis, and treatment options. Paper presented at: International DME Expert Summit; June 22, 2014; Paris, France.

2. Klein R, Klein BE, Moss SE, Davis MD, DeMets DL. The Wisconsin epidemiologic study of diabetic retinopathy: IV. Diabetic macular edema. *Ophthalmology.* 1984;91:1464-1474.

3. Early Treatment Diabetic Retinopathy Study Research Group. Early Treatment Diabetic Retinopathy Study. *Ophthalmology.* 1991;98(Suppl 5):739-840.

4. Wilkinson CP, Ferris FL, Klein RE, et al. Global Diabetic Retinopathy Project Group: Proposed international clinical diabetic retinopathy and diabetic macular edema disease severity scales. *Ophthalmology.* 2003;110:1677-1682.

Symptoms and Onset

If retinal vessels bleed into the eye, patients may experience temporary vision changes. However, if left untreated, bleeding may reoccur and damage vision permanently. Below is a visualization of the potential visual effects of DME.

Normal Vision

Vision Affected by DME

Blurring

Loss of Contrast

Spots and Blotches

Wavy Lines