

“Under Pressure” The New Hypertension Guidelines

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Course Description:

This course will provide the latest information on hypertension (HTN) and hypertensive retinopathy (HTR). Emphasis will be newest HTN guidelines.

Goal:

Provide attendees with the updated HTN guidelines, use of advance diagnostic modalities and treatment for HTR, and discuss integration of these into clinical practice.

Learning Objectives:

At the conclusion of this course, attendees should be better able to effectively:

- 1) Apply the new hypertension definition, classification, and treatment target.
- 2) Identify, review, and outline treatment for hypertensive retinopathy.
- 3) Appreciate the latest technologies in diagnosis of hypertensive retinopathy- ultra wide-field imaging, multi-modal imaging with SD-OCT and OCT angiography (OCTA).
- 4) Be able to recognize HTN urgency and emergency (malignant HTN retinopathy).
- 5) Describe interprofessional team strategies for improving care coordination and outcomes in patients with hypertensive retinopathy

Abstract

Hypertension is on the rise. With the new guidelines, nearly half of U.S. adults (46%), up from 32%, could be classified with high blood pressure. Detecting early retinal findings can prevent vision loss and, more importantly, disability and premature death from this disease.

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- I. Hypertension Key Facts
 - 116 million Americans (1 of every 3 adults)
 - “Silent killer”: mostly an asymptomatic, unless severely elevated, which is associated with headache, shortness of breath, and anxiety
 - Nearly half of people with high blood pressure (47.5 %) do not have it under control.
 - An estimated 46% of adults with hypertension are unaware that they have the condition.
 - HTN and Race
 - The prevalence of hypertension is high among certain racial/ethnic minority groups, particularly African American adults
 - Non-Hispanic black adults (56%)
 - Hispanic adults (39%)

- II. Latest Hypertension Clinical Practice Guidelines
 - Definition- The new guideline lowers the target for blood pressure treatment to 130/80 mmHg
 - Classification:
 - Elevated: Systolic between 120-129 *and* diastolic less than 80
 - Stage 1: Systolic between 130-139 *or* diastolic between 80-89
 - Stage 2: Systolic at least 140 *or* diastolic at least 90 mm Hg
 - Hypertensive crisis: Systolic over 180 and/or diastolic over 120, with patients needing prompt changes in medication if there are no other indications of problems, or immediate hospitalization if there are signs of organ damage.

- III. 3-type of ocular damage- Retinopathy, Optic neuropathy, and Choroidopathy.
 - Hypertensive Retinopathy (HTR)
 - Important warning sign (up to 80% of HTN)
 - Case presentation(s)
 - Pathophysiology
 - Retinal blood vessels have distinct features, which differentiate them from other blood vessels
 - The absence of sympathetic nerve supply
 - Autoregulation of blood flow
 - Presence of blood-retinal barrier
 - Persistent increase in BP causes certain changes in vessel wall:
 - Intima layer: Thickening
 - Media layer: Hyperplasia

- Arteriolar wall: Hyaline degeneration
- Early HTR
 - Focal arteriolar narrowing
 - Arteriolar/venule (AV) crossing changes: Gunn's Sign
 - Venous deflection (Salus 'sign)
 - Banking of vein distal to the crossing site (Bonnet's sign)
 - Changes in the arteriolar light reflex- Arteriolar sheathing (known as "silver" or "copper" wiring)
- Moderate-exudative phase
 - Disruption of the blood-brain barrier and leakage of blood and plasma into the vessel wall disrupting the autoregulatory mechanisms.
 - Retinal or flame-shaped hemorrhages, cotton wool spots, exudates
 - Follow-up: six- twelve weeks follow-up to assess for regression with the control of blood pressure
- Optic Neuropathy – Malignant HTR case presentation
 - Medical **emergency**
 - Anti-hypertensive agents (IV drip) for and admission to ICU
 - Goal: Lower Diastolic BP to approximately 100-105 over 2-6 hours
 - Maximum initial fall not to exceed 25%. More aggressive decrease (abrupt drop in BP) can lead insufficient perfusion pressures and organ damage resulting in an ischemic stroke and myocardial ischemia
 - If focal neurological symptoms present, obtain MRI to r/o acute stroke (rapid BP correction contraindicated)
 - *The mortality rate is 50% at 2 months and 90% at one year if untreated*
 - Management: Anti-VEGF for macula edema
- Choroidopathy- Case presentation
 - More common in YOUNG patients with acute severe HBP
 - Elschnig's spots-Focal area of RPE atrophy with associated pigmentations
 - Siegrist's line- Linear RPE pigmented changes that develop over sclerotic choroidal arteries

IV. Paradigm Shift in patient care:

- Early clinical findings necessitate referral to PCP for HTN management
 - Early HTR- Associated with 2X risk of stroke according to the ARIC study
 - Moderate HTN-2-3X more likely to develop a stroke (ARIC study).
 - HTN Urgency (Severe Hypertension + NO End Organ Damage)- Patients with blood pressure greater than 180/110 require prompt evaluation and management with PCP.

- HTN Emergency- Malignant HTR Medical Emergency- Call 911 Neurological signs (headaches/ TIA or other neurological signs)
 - Visual field testing
 - MRI or CT scan- to r/o Hypertensive Encephalopathy

V. Conclusion

- Hypertension is increasing at an alarming rate
- Optometry plays an important role in detecting the disease.
- By detecting the early warning sign of HTR, we can significantly impact not only the patient's visual and systemic health, but potentially save their lives

References:

1. 2017 ACC/AHA/AAA/ABC/ACPM/AGS/APhA/ASH/ASPC/NMA/PCNA guideline for the prevention, detection, evaluation, and management of high blood pressure in adults Hypertension, 71 (2018), 13-115
2. Retinal microvascular abnormalities and incident stroke: the Atherosclerosis Risk in Communities Study. Lancet. 2001 Oct 06;358(9288):1134-40.
3. Hypertensive retinopathy and its association with cardiovascular, renal, and cerebrovascular morbidity in Congolese patients. Cardiovasc J Afr. 2014 Sep-Oct;25(5):228-32.
4. Hypertension-related eye abnormalities and the risk of stroke. Rev Neurol Dis. 2011;8(1-2):1-9
5. Hypertensive retinopathy: incidence, risk factors, and comorbidities. Clin Exp Hypertens. 2012;34(6):397-401
6. Hypertensive eye disease: a review. Clin Exp Ophthalmol. 2017 Jan;45(1):45-53.