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IPGPR 2021CN111

Evidence based guidelines for diagnosis and treatment of age related macular degeneration in China (2023)

Chinese Vitreo Retina Society of Chinese Medical Association, Fundus Disease Group of Chinese Ophthalmologist Association

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Abstract Age related macular degeneration (AMD) is the main cause of low vision and even blindness in the elderly. With the aging of our population, the number of AMD patients will continue to rise. In the past decade, the rapid development of ocular fundus imaging technology has provided a new perspective and approach for the classification, diagnosis and follow up of AMD. The advent of new drugs has provided more diverse intervention and treatment methods for AMD, especially for neovascular AMD, and the emphasis on accurate and individualized treatment has put forward higher requirements for retinal specialists. Therefore, based on the latest evidence based medical information, combined with the international guidelines and the current situation of China's social and economic development, experts from the Chinese Vitreo Retinal Society of Chinese Medical Association, the Fundus Disease Group of Chinese Ophthalmologist Association, and the

DOI 10.3760/cma.j.cn112142-20221222-00649

2022-12-22

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2023 [J]. , 2023, 59(5): 347-366. DOI: 10.3760/cma.j.cn112142-20221222-00649.

National Clinical Research Center for Eye Diseases gave recommendations around eight clinical problems and formed China's guidelines for the clinical diagnosis and treatment of AMD. With the implementation of these guidelines, we can standardize the diagnosis, treatment, prevention and follow up of AMD in China. (This article was published ahead of print on the official website of Chinese Journal of Ophthalmology on April 6, 2023)

Key words Macular degeneration; Practice guidelines as topic; Evidence based medicine

Practice guideline registration: Practice Guideline Registration for Transparency, IPGRD 2021CN111

age related macular AMD degeneration AMD AMD [1] 2040 AMD 2.88 [2 3] 70 AMD 20.2% [3] AMD

2013 Beckmann AMD AMD AMD AMD 2013 AMD [4] Age related Eye Disease Study AREDS AMD Beckmann [5] AMD geographic atrophy GA AMD AMD AMD AMD 10%~20% [1]

optical coherence tomography OCT AMD AMD 2020 AMD macular neovascularization MNV OCT MNV 1 2 3 [6] AMD 10

optical coherence tomography angiography OCTA AMD [7 8] AMD

vascular endothelial growth factor VEGF [9 11]

[12] 2023 AMD AMD

GRADE grading of recommendations assessment development and evaluation 1 [13 16] GRADE world health organization WHO [17] 2016 / [18]

http //www.guidelines registry.cn IPGRP 2021CN111

GRADE 2 1

AMD 4 2

AMD

1 GRADE [13 16]

A	
B	
C	
D	
1	
2	

GRADE

2 AMD 7

AMD

[15 16]

*

1 1

1 * *

2 best

AMD corrected visual acuity BCVA

AMD * 5 10 15 BCVA

* 5 10 15 BCVA

* central retinal thickness

CRT

pigment epithelial detachment PED

PED

OCT

24 80

WHO

1.

population P

intervention I comparator C

outcome O

AMD

PubMed Embase Web of

Science the Cochrane Library

2022 6 1

8 1

2.

randomized controlled trial RCT RCT RCT 2

3 Cochrane [19] RCT Newcastle Ottawa Newcastle Ottawa Scale NOS

AMD 55~59
3.5% 85 17.6%
AMD 0.1% 9.8%[27]

AMD
AMD
[28 29]

AMD 12.3% 7.4%
7.5%
[2] GA
AMD
[2] AMD
polypoidal choroidal
vasculopathy PCV
[30] Beijing Eye
PCV 0.3%±0.1%[31] PCV
AMD 22.3%~43.4%[32 33]

1. AMD
AMD [34]
H Y402H
ARMS2 HTRA1 [35 38]
AMD
AMD [39]

2. AMD
AMD
[34 40] AMD
AMD
[40]

3. AMD
[41 42] AMD
[43] [43]
AMD

4. AMD
Omega 3
[44 45] AMD
[46]
AMD
[47 48]

AMD
AMD
RPE Bruch

AMD

2

H

4.　subretinal drusenoid deposit SDD reticular pseudodrusen RPD

RPE

OCT　SDD　RPE

RPE

FFA　ICGA

RPE　124 μm　1

SDD[51]　SDD

AMD　SDD

AMD[53]　SDD

AMD　SDD　GA

GA　RPE

Bruch　RPE

Age related Eye Disease Study 2　AREDS2

GA　GA

0.29 mm/　GA　0.28 mm/[55]

BMES　Rotterdam

GA　1.09 mm²/[56]

GA　CNV[57]　GA

[55]

AMD

Bruch　RPE

VEGF

placental growth factor　PIGF

platelet derived growth factor　PDGF

tissue inhibitor of metalloproteinase　TIMP

[58]

[59]

PED　[60]

AMD

AREDS　AMD

AMD

1.　AMD[1]

2.　AMD

<63 μm　63~124 μm　RPE[1]

3.　AMD

RPE[6]

63~

RPE　124 μm　1　≥125 μm

GA[1]

4.　AMD　GA

MNV

intraretinal fluid　IRF

subretinal fluid　SRF　PED

[1]

CNV

CNV

2

<200 μm

≥200 μm

FFA　CNV

CNV　FFA

GA

CNV　PED

late leakage of undetermined source　LLUS

PED　FFA

RPE

LLUS　FFA

CNV

PED　CNV

50%

CNV

50%　CNV

CNV[61]

ICGA　CNV　FFA

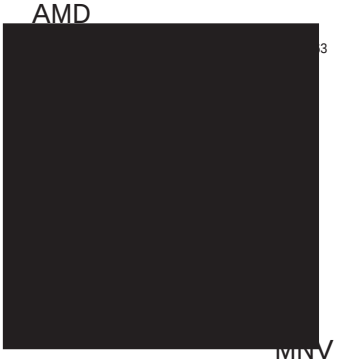
CNV　ICGA　FFA　FFA

CNV　ICGA

1　CNV　CNV　CNV

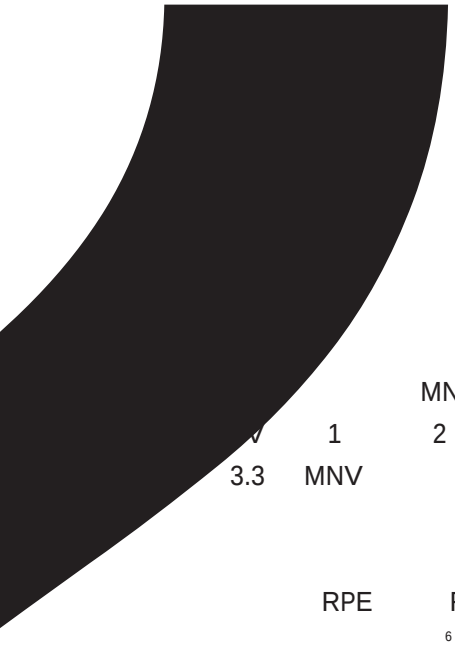
≤1　diameter of optic disc　DD

2 CNV CNV >1 DD CNV 3 CNV CNV [62] MNV AMD AMD retinal angiogmatous proliferation RAP “ CNV ”



[3] MNV RPE RPE CNV MNV [6 63]

PED PCV 1 MNV [6 63]



[6] PCV RPE CNV 2 MNV [6 63] 1 2 V 1 2 MNV 3.3 MNV RAP RPE RPE RPE [6 63]

3 MNV IRF SRF PED PED RPE RPE Bruch RPE Bruch

PED PED PED PED PED PED AMD PED PED AREDS >350 μm AMD GA AMD 1 3 MNV À° ← * M w1

1 MNV FFA RPE ICGA PCV ICGA
[64] 2 MNV FFA 3 MNV FFA ICGA [65]

OCT
OCT AMD
B MNV [66]
OCT AMD OCT swept source OCT SS OCT 1 050~1 060 nm

1 MNV OCT RPE PED SRF IRF PCV OCT RPE Bruch PED [64] 2 MNV OCT SRF IRF [67] 3 MNV RAP OCT PED IRF [68]
OCTA
OCTA

OCTA

AMD

OCTA
AMD
MNV FFA 91% 73% [66 69 73] PCV OCTA 79% 72% [8 74 75] OCT OCTA 84% 67% [8 74] RAP FFA ICGA [76]
OCTA [7 77] OCTA

1 S E

AREDS
C 500 mg E 400 IU β
15 mg 80 mg 2 mg
[5] AMD
1
AMD
AMD
AREDS2
AREDS 10 mg
2 mg β 80 mg
25 mg Omega 3 [78]
AMD 1
10 mg 20 mg
10 mg
200 mg docosahexaenoic acid
DHA 840 mg eicosapentaenoic
acid EPA 270 mg [5 78 89]
2
[5 78 89]
AMD
2B
B
AMD
2 632
2 13 AMD
AMD
AMD [5 78 89]
[5 78 89]
AMD
1 BCVA 10
BCVA
1
AMD BCVA 10
1
AMD BCVA BCVA
15
β

AMD VEGF
1. VEGF VEGF
AMD
MNV
AMD VEGF
1
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VEGF A
VEGF
2011 AMD
1 0.5 mg/
4 3
1 0.5 mg/ pro re
nata PRN 3+PRN
4 0.3 mg 0.5 mg
AMD
CNV 2 Marina
0.3 mg 6.5
0.5 mg 7.2
10.4 [9]
4 0.3 mg
0.5 mg photodynamics therapy
PDT PDT AMD
CNV 2 Anchor
0.3 mg
8.5 0.5 mg 11.3
PDT 9.5
CNV
PDT [90] 2006
AMD
AMD VEGF
2
VEGF VEGF VEGF
receptor VEGFR 1 Ig 2 VEGFR2
Ig 3 4 Ig Fc
VEGF A VEGF B PIGF 2013
AMD 3

1 0.5 mg/ 3
1 3+ 3
3 1
0.5 mg/ PRN 3+PRN [91]
AMD
Aurora
0.5 mg 0.5 mg/ 2 mg
2 mg/ 3
1 2 PRN
12
14.31 0.5 mg 3+PRN 9.31 0.5 mg
3+ 12.42 2 mg 3+PRN
15.43 2 mg 3+
AMD
[92] 0.5 mg/
AMD
Phoenix 3+ 3
12 BCVA
9.98 3+ 3
AMD [10]
3
VEGFR1 Ig 2 VEGFR2 Ig
3 IgG1 Fc VEGF A
VEGF B PIGF 2018 λ

AMD [101]

3+PRN

50%~60% AMD [102-104]

4 3+T&E

AMD Trex Trend Cantreat [95-97]

PRN

Phoenix 0.5 mg/ 3+3 12 BCVA 9.98 CRT 99.63 μm Aurora 0.5 mg 3+PRN 12 BCVA 14.31 CRT 119.8 μm 3+3 3+PRN AMD [10 92]

AMD

Altair 2 3+T&E 2 2 4 4 52 2 4

96 96 56.9% 60.2% 12 41.5% 46.3% 16 [99]

4

VEGF

AMD VEGF [105-113]

VEGF 3+PRN 3+T&E 2C

AMD VEGF 5 022

1 1 9

3+PRN 3+T&E 1 2 BCVA 2.79 1 2.8 2 3+T&E 3+PRN 2~3

AMD

VEGF 3+PRN 3+T&E VEGF 3+T&E

3. AMD VEGF 3 1

AMD VEGF 30% [114] AMD VEGF [115] IRF SRF CRT BCVA BCVA >5 AMD VEGF [116]

5 VEGF VEGF [117-124] VEGF VEGF AMD

中華醫學會

AMD

6~12 1

MNV

GRADE

OCT OCTA

2. MNV

AMD

MNV MNV

5 [136] 1 MNV

20% MNV [136] OCT

OCTA PED

MNV

MNV

MNV GRADE

[157]

1 WHO

AMD

AMD 8

AMD

AMD

AMD

WHO

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