Methodology - Supplemental Material

The color FAF image was first transformed in a 32-bit gray-scale image and then converted to a 8-bit gray-scale image. Since the color FAF has 8-bits of depth for each color channel, the 32-bit single channel grayscale image is computed as the average of the color channels in the original image, as follows:

(1)

$$\text{Grayscale image} = \boldsymbol{m} * \text{AVERAGE}(R, G, B) = \boldsymbol{m} * (R/3 + G/3 + B/3) = \boldsymbol{m}/3 * (R + G)$$

where ***m*** is the rescaling factor used in the histogram stretching, and depends on the maximum value of AVERAGE(R,G,B). Assumed “MAX” be the maximum value of AVERAGE(R,G,B), then:

(2)

$$\boldsymbol{m} = 255/\text{MAX}$$

Since “MAX” is always <= 255, ***m*** is always >= 1. To simplify, we can define ***w1*** = ***m***/3, and rewrite:

(3)

$$\text{Grayscale image} = \boldsymbol{w1}\,(R + G)$$

Finally, in order to optimize the visualization of those regions where the REFC is absent or the AF is mainly due to the presence of GEFC, a “subtraction” function was performed, subtracting the “green channel” of the color FAF image from the obtained gray-scale FAF image, to yield the 450-RF image, as follows:

(4)

$$\text{450-RF} = \text{Gray-scale image} - G = \boldsymbol{w1}\,(R + G) - G = \boldsymbol{w1}\,R - (1 - \boldsymbol{w1})\,G = \boldsymbol{w1}\,R - \boldsymbol{w2}\,G$$

where ***w2*** = (1 - w1).

To summarize, this image processing masks those regions which have one of these characteristics:

- R=0.
- G >= (***w1***/***w2***) R

Where ***w1***/***w2*** has a median value of 1.4 (IQR: 1.2-1.6) in our study cohort.

By using this approach rather than simply using the red channel of the color FAF image, all those regions where the intensity of the REFC is 0 and/or the AF is mainly due to the presence of GEFC are thus masked.