THE FLUORESCEIN ANGIOMGRAM AS A ROADMAP FOR PHOTOCOAGULATION OF CSR

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Fluorescein angiography has not only reordered ophthalmologists' ideas about Central Serous Retinopathy in the area of pathogenesis, but it has also led the way in localizing the focal leakage site that is pathognomonic of the disease. The very nature of the serous leak that causes a detachment of the neurosensory epithelium allows the fluorescein angiographic study to play the role of roadmap for lasercoagulation therapy.

The important fluorographic characteristic of Central Serous Retinopathy is the appearance of a discrete leakage of dye in the arteriovenous phase. When there exists a focal detachment of the retinal pigment epithelium, a faster diffusion of dye occurs in the arteriovenous phase. Funduscopically, these detachments of the retinal pigment epithelium appear as yellow-gray, well circumscribed areas that may reach one-third of a disc diameter in size. Since the leak of serum through the retinal pigment epithelium is fluorographically represented by the classic punctate leak in the arteriovenous phase, the ophthalmic photographer must photograph the retinal dye flow in a serial fashion—the sequential rate of interpretation is not critical.

Post-venous photographs are desirable because they distinguish a true leak from hyperfluorescence. Hyperfluorescence is the increased transmission of choroidal fluorescence due to retinal pigment epithelial hypopigmentation (atrophy) and subsequent loss of the retinal pigment epithelium's filtration properties. Dye that recirculates post-venously in the choroid is very much diluted and therefore emanates a negligible amount of visible fluorescence.

A true leak persists for up to an hour or sometimes more. It is manifested in the late phase by further diffusion—occasionally into the subretinal transudate.

A central serous leak occurs in the macular or paramacular area, sometimes too close to the foveal pit for comfort. The advent of the argon laser and its ability to apply small, fifty micron photocoagulates have allowed retinologists to seal previously untreatable leakage sites because of their close proximity to the fovea. A good quality fluorescein angiographic study with emphasis on the early phases is essential to this end. It is desirable to include at least part of the optic disc in the frame as a point of reference, since this would allow the photocoagulation operator to follow the retinal vessels distally from the optic disc for orientation. This becomes even more imperative when the leakage site if very
close to the fovea.

The final form of the fluorescein angiographic study as it is presented to the ophthalmologist is a subjective matter. The way that I approach it is based on the concept of using the angiogram as a roadmap for treatment. I would usually make an 8 x 10 enlargement of the appropriate frame (arteriovenous phase). This way, the physician can easily distinguish retinal details on the photograph during photococagulation, and correlate them to the corresponding areas that he or she visualizes through the laser's biomicroscope.

Fluorescein angiography performed and presented in the appropriate manner is an invaluable aid to the ophthalmologist in the area of therapy as well as diagnosis.

THE USE OF CIBACHROME IN MEDICAL AND OPHTHALMIC PHOTOGRAPHY

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The Departments of Audio-Visual and Ophthalmology wish to report on the use of Cibachrome. The following report consists of the modifications in the process that we found necessary to obtain an optimum print.

I. Filter Pack
We found that if you are using a dichroic enlarger no basic filter pack is necessary. The only filtration we use is a 2E filter, located in the enlarger head, and only half of the yellow and all of the cyan suggested on each package of paper.

II. Exposure
With the enlarger focused at the selected height and the slide and filters out of the way, we employ a Gossen Luna Pro Meter. The meter is held in a vertical position with the incident diffusion disk in place. The f stop on the enlarger is changed until a reading of six is read on the meter. (This is equal to 5.5 foot candles) Length of exposure is 15 seconds, for an 8 x 10 print.

III. Processing
We found that the following processing routine is necessary to eliminate a yellow stain that appears on the edges of the paper. All processing is carried out in a Cibachrome Drum with a uniroller. (All processing temperatures are at 75°.)

1. Develop 2 minutes (with uniroller)
2. Bleach - first 30 seconds, rapid manual rapid agitation. Then continue agitation in the normal manner for 3 1/2 minutes.
3. Wash - dissolve 8 grams of Sodium Bicarbonate or 1/2 of a neutralizer tablet in 90 ml water. Pour into the drum and agitate on the roller for 30 seconds. Pour this out. Next use 180 ml water at 75° for 30 seconds manual/rapid agitation. Dump and repeat twice.
4. Fix - 3 minutes.
5. Wash - 3 minutes.
6. Dry by hanging up by one corner. We do not recommend squeegeeing the print as this tends to scratch the soft emulsion.
7. After processing wash the drum and end caps in 160° water continuously for 5 minutes.

IV. Use in Ophthalmic Photographs
We found that Cibachrome is very helpful in making up contact sheets of retinal photographs. We have made up a small contact printing registration card that makes the process very simple to execute. The most important aspect is the use of a plastic slide page is to cut out the center of each envelope to match the area of the slide. (Slide 1 see next page)
We then place the slides to be printed in the modified page. Next place the paper on the board. We then place the sheet over the paper and place a piece of glass over this to keep it flat. (Slide 2) Following the same procedure for filtration and processing. NOTE: that the enlarger has an empty 35 mm negative carrier in place and the light image is no more than 8 x 10 inches.

Although the cost of Cibachrome is high, $40.00 for paper and chemistry which yields 20 prints, we found that it is more expensive to duplicate twenty slides. The print costs about $2.00 not including time. Whereas the duplicates cost $3.60 per twenty not including the cost of a plastic slide page. The most advantageous feature of Cibachrome is the time necessary to come up with a finished product. One does not need to wait for the film to come back from processing.

Slide #1
Registration board with paper under modified plastic slide holder.

Slide #2
Plastic slide holder with slides in place, ready for contact printing.

OPS Members Asked to Respond
Any member who has failed to complete the card attached to the last newsletter, please complete it and mail at once. If you wish to continue receiving OPS material I must have your card for completing the mailing list for the next issue. If I don't hear from you, you won't hear from me.

Many thanks to those who have responded so promptly.

News Anyone?
Articles with or without photographs on instrumentation, new techniques, patient management, diagnosis cross-referencing, film processing etc., etc., etc. are needed. Deadline for next issue is January 15th, 1976.

Correction In Last Issue
It was noted in the last issue that Frank Flanagan was credited with the photographs. My apologies for this error to Jim Ferguson who was really responsible for the photography. I had intended to telephone Jim with this apology but he was never in his office!

Reactions to Fluorescein?
A helpful hint to those who are experiencing patients who have reactions to fluorescein such as nausea and vomiting: Don't tell the patient he should expect to be sick from the injection. There are many subtle methods of instructing a patient of possible side affects (if you are legally expected to warn the patient, at your institution, of all possible complications).

A photographer, doctor or nurse who warns a patient of all possible reactions before the injection will do doubt bring about some type of reaction.
Regional O.P.S. Workshop Offered

According to Mr. Don Wong, New York, a regional two day ophthalmic photography workshop is being planned by the New York Chapter of the O.P.S.

The meeting will include a scientific program and two "hands on" workshops. One for fundus photography and the other demonstrating slit lamp photography.

Planned for early 1976, the meeting will be held at the Cabrini Health Care Center in New York. Advance registration is a must. Details will be published in upcoming newsletter issues.

HAPPY HOLIDAY