

GLOMERULONEPHRITIS IN A PATIENT WITH DM: DIAGNOSTIC PITFALLS

PETER JANSSENS, NEPHROLOGY, UZ BRUSSEL

CASE REPORT

74 YO

HISTORY

DM TYPE II
AHT
H PYLORI GASTRITIS

CASE REPORT

74 YO

HISTORY

DM TYPE II
AHT
CPPD
H PYLORI GASTRITIS

CASE

BURSITIS FOR 1 WEEK
ADMISSION
SURGICAL DRAINAGE
IV FLUCLOXACILLIN

CASE REPORT

74 YO

HISTORY

DM TYPE II
AHT
CPPD
H PYLORI GASTRITIS

CASE

BURSITIS FOR 1 WEEK
ADMISSION
SURGICAL DRAINAGE
IV FLUCLOXACILLIN

10 DAYS LATER BILATERAL OEDEMA, HYPERTENSIVE, AKI

CASE REPORT

74 YO

HISTORY

DM TYPE II
AHT
CPPD
H PYLORI GASTRITIS

CASE

BURSITIS FOR 1 WEEK
ADMISSION
SURGICAL DRAINAGE
IV FLUCLOXACILLIN

10 DAYS LATER BILATERAL OEDEMA, HYPERTENSIVE, AKI

CREATINE 1.14 mg/dL



3.19 mg/dL

CASE REPORT

74 YO

HISTORY

DM TYPE II
AHT
CPPD
H PYLORI GASTRITIS

CASE

BURSITIS FOR 1 WEEK
ADMISSION
SURGICAL DRAINAGE
IV FLUCLOXACILLIN

10 DAYS LATER BILATERAL OEDEMA, HYPERTENSIVE, AKI

CREATINE 1.14 mg/dL  3.19 mg/dL

CULTURES BURSITIS: MSSA

CASE REPORT

74 YO

HISTORY

DM TYPE II
AHT
CPPD
H PYLORI GASTRITIS

CASE

BURSITIS FOR 1 WEEK
ADMISSION
SURGICAL DRAINAGE
IV FLUCLOXACILLIN

10 DAYS LATER BILATERAL OEDEMA, HYPERTENSIVE, AKI

CREATINE 1.14 mg/dL  3.19 mg/dL

CULTURES BURSITIS: MSSA

BLOOD CULTURES negative

WHAT WOULD YOU DO?

EKG, Echocardiography, Troponine, Renal ultrasound

EKG, Echocardiography, Troponine, Renal ultrasound, Stop ACE-I

EKG, Echocardiography Troponine, Renal ultrasound, FENA

EKG, Echocardiography, Troponine, Renal ultrasound, AI workup

*EKG, Echocardiography, Troponine, Stop ACE-I, Renal ultrasound, Proteinuria,
Sediment*

WHAT WOULD YOU DO?

EKG, Echocardiography, Troponine, Renal ultrasound

EKG, Echocardiography, Troponine, Renal ultrasound, Stop ACE-I

EKG, Echocardiography Troponine, Renal ultrasound, FENA

EKG, Echocardiography, Troponine, Renal ultrasound, AI workup

*EKG, Echocardiography, Troponine, Stop ACE-I, Renal ultrasound, Proteinuria,
Sediment*

RESULTS

EKG unchanged, Normal Troponine, Diastolic heart failure

US: Both Kidneys 10 cm, Normal Doppler

Proteinuria 3g/g creatinine and microscopic haematuria

RESULTS

EKG unchanged, Normal Troponine, Diastolic heart failure

US: Both Kidneys 10 cm, Normal Doppler

Proteinuria 3g/g creatinine and microscopic haematuria

Electrophoresis

ANA

ANCA

Hepatitis B, C

HIV

Cryoglobulins

RESULTS

EKG unchanged, Normal Troponine, Diastolic heart failure

US: Both Kidneys 10 cm, Normal Doppler

Proteinuria 3g/g creatinine and microscopic haematuria

Electrophoresis

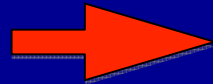
ANA

ANCA

Hepatitis B, C

HIV

Cryoglobulins



Negative

RESULTS

EKG unchanged, Normal Troponine, Diastolic heart failure

US: Both Kidneys 10 cm, Normal Doppler

Proteinuria 3g/g creatinine and microscopic haematuria

Electrophoresis

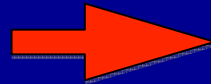
ANA

ANCA

Hepatitis B, C

HIV

Cryoglobulins



Negative

C3 LOW
C4 ELEVATED

RESULTS

EKG unchanged, Normal Troponine, Diastolic heart failure

US: Both Kidneys 10 cm, Normal Doppler

Proteinuria 3g/g creatinine and microscopic haematuria

Electrophoresis

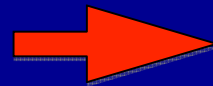
ANA

ANCA

Hepatitis B, C

HIV

Cryoglobulins



Negative

C3 LOW
C4 ELEVATED

Persistent fever, High CRP, Resolution bursitis

RESULTS

EKG unchanged, Normal Troponine, Diastolic heart failure

US: Both Kidneys 10 cm, Normal Doppler

Proteinuria 3g/g creatinine and microscopic haematuria

Electrophoresis

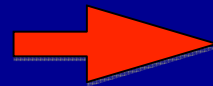
ANA

ANCA

Hepatitis B, C

HIV

Cryoglobulins



Negative

C3 LOW
C4 ELEVATED

Persistent fever, High CRP, Resolution bursitis

Repeat blood cultures negative

RESULTS

EKG unchanged, Normal Troponine, Diastolic heart failure

US: Both Kidneys 10 cm, Normal Doppler

Proteinuria 3g/g creatinine and microscopic haematuria

Electrophoresis

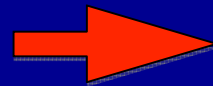
ANA

ANCA

Hepatitis B, C

HIV

Cryoglobulins



Negative

C3 LOW
C4 ELEVATED

Persistent fever, High CRP, Resolution bursitis

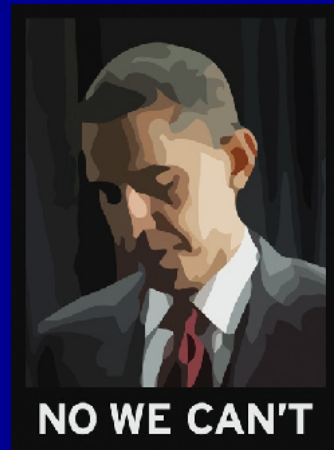
Repeat blood cultures negative

Anasarca, Bilateral pleural effusion, Creatinine stable

Would You Do A Kidney Biopsy?



YES



NO

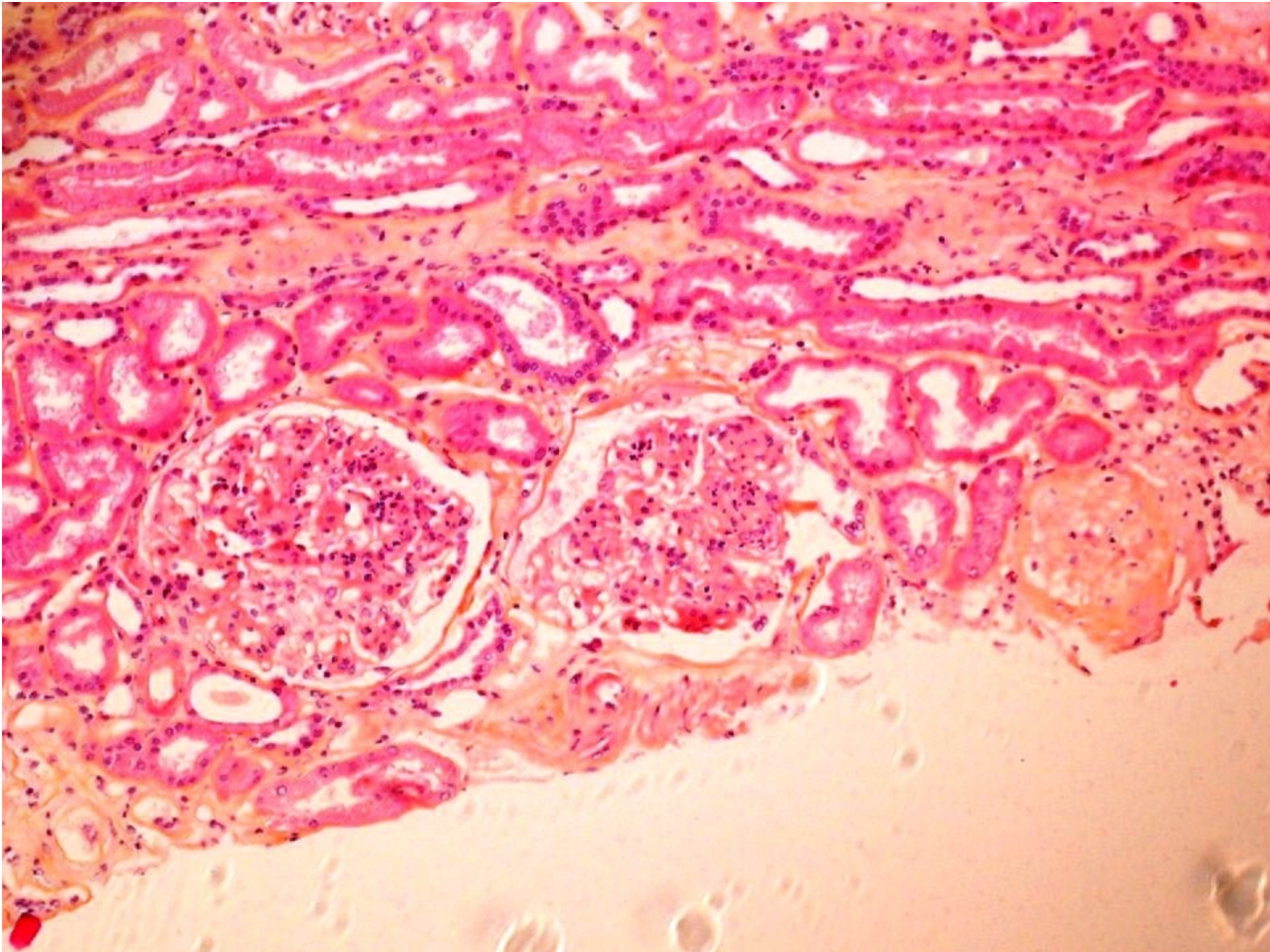
Would You Do A Kidney Biopsy?

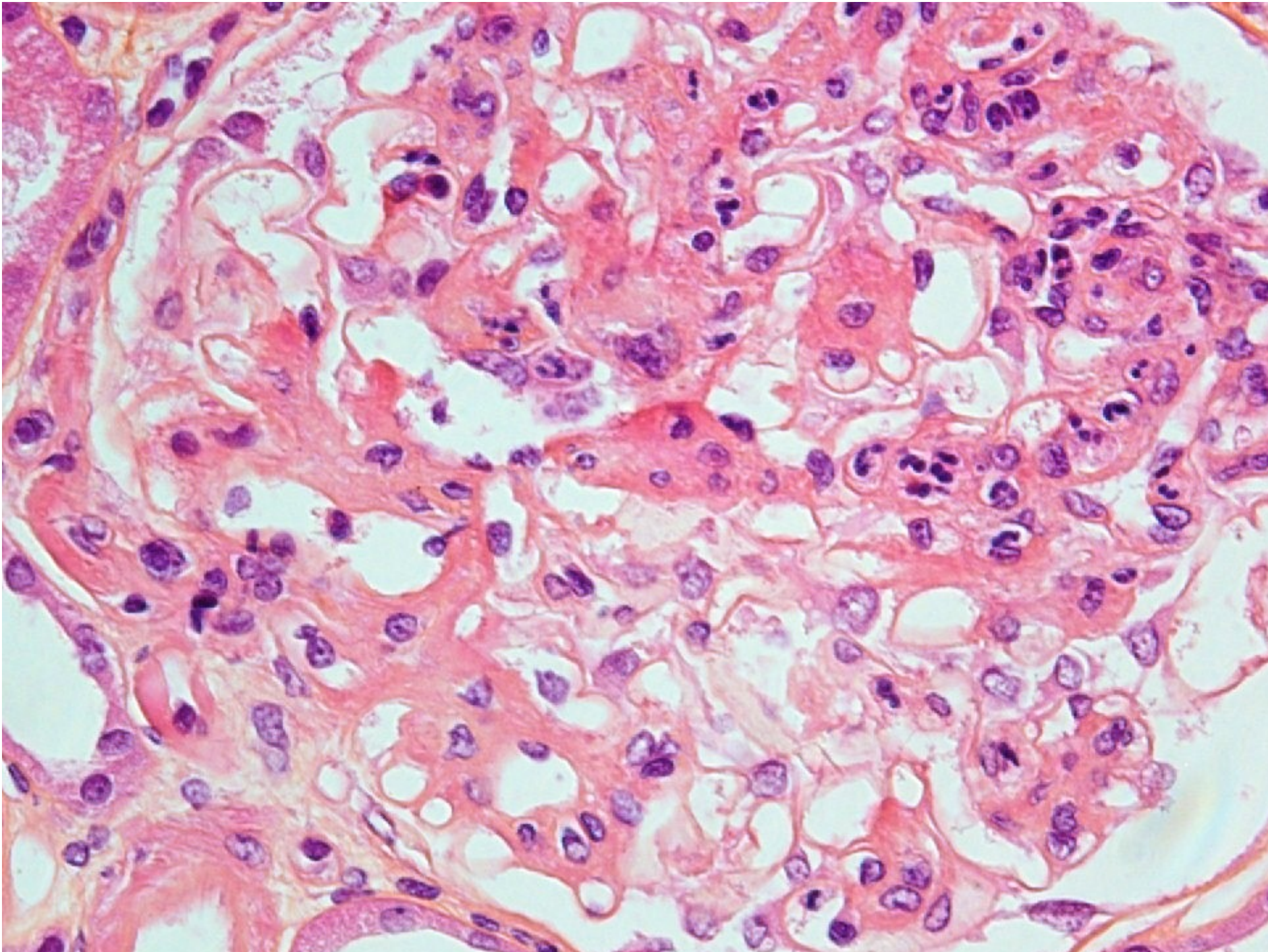


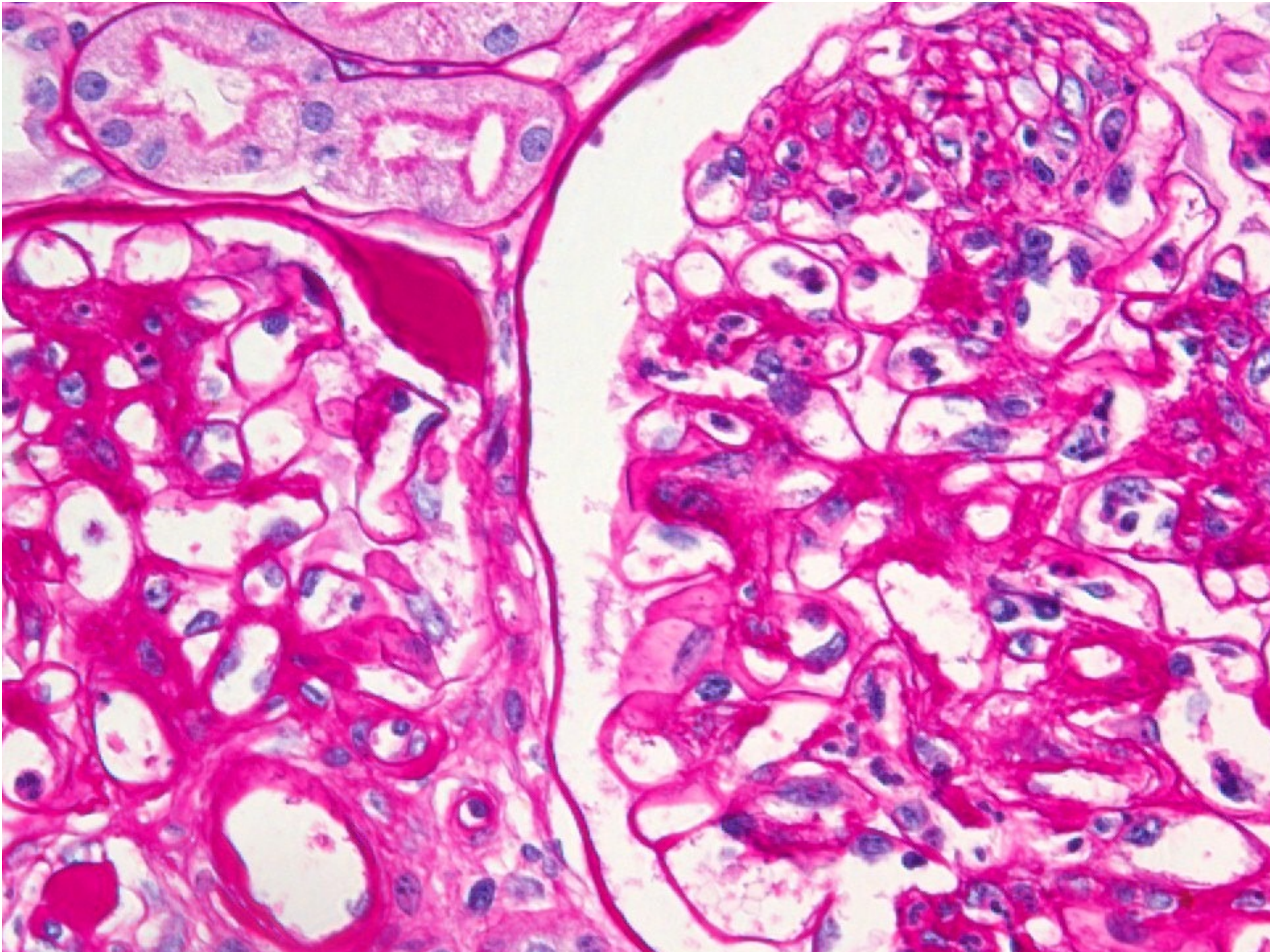
YES, WE DID!



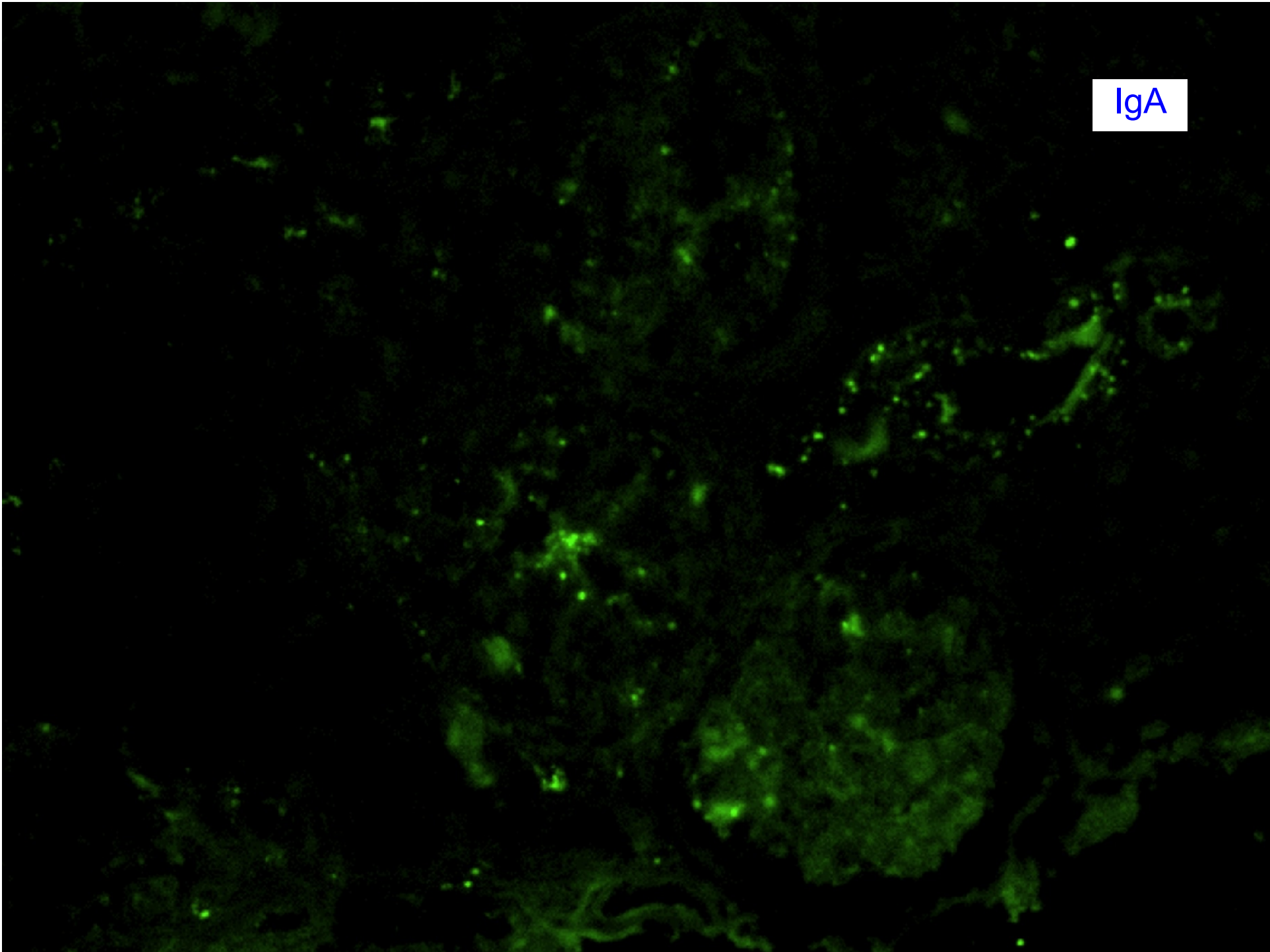
NO



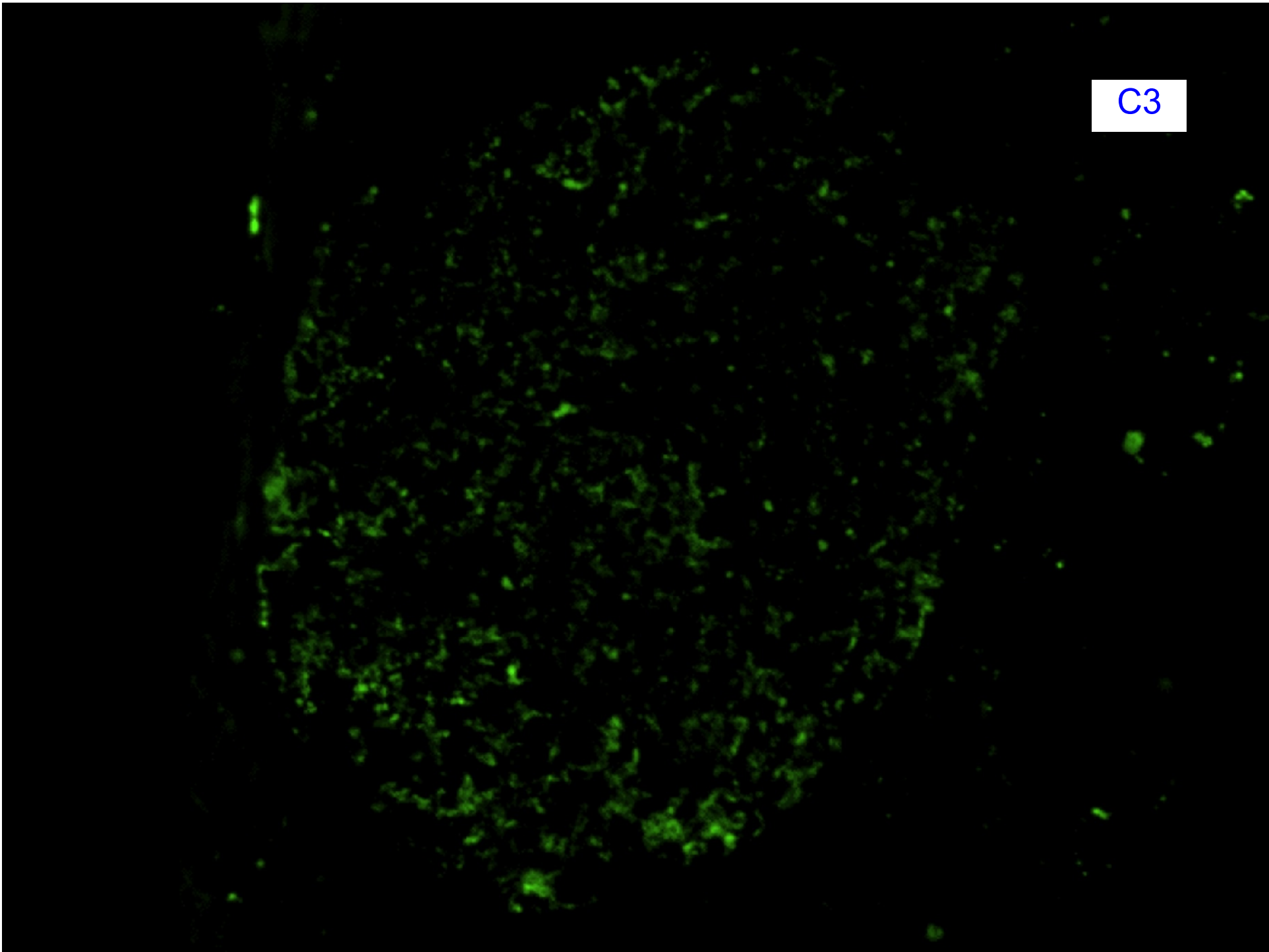




IgA



C3



NOW WHAT'S YOUR DIAGNOSIS?

DIABETES NEPHROPATHY

TUBULO INTERSTITIAL NEPHRITIS

IgA NEPHROPATHY

POST-INFECTIOUS GLOMERULONEPHRITIS

S AUREUS-ASSOCIATED GLOMERULONEPHRITIS

C3 NEPHROPATHY

NOW WHAT'S YOUR DIAGNOSIS?

DIABETES NEPHROPATHY

TUBULO INTERSTITIAL NEPHRITIS

IgA NEPHROPATHY

POST-INFECTIOUS GLOMERULONEPHRITIS

S AUREUS-ASSOCIATED GLOMERULONEPHRITIS

C3 NEPHROPATHY

S AUREUS-ASSOCIATED GLOMERULONEPHRITIS

GLOMERULAR DEPOSITION OF IMMUNE COMPLEXES

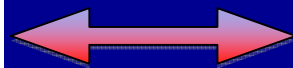
CONTINUOUS PRODUCTION S AUREUS ANTIGEN

S AUREUS-ASSOCIATED GLOMERULONEPHRITIS

GLOMERULAR DEPOSITION OF IMMUNE COMPLEXES

CONTINUOUS PRODUCTION S AUREUS ANTIGEN

DURING INFECTION



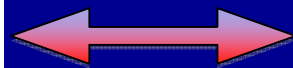
POST-STREPTOCOCCAL GN

S AUREUS-ASSOCIATED GLOMERULONEPHRITIS

GLOMERULAR DEPOSITION OF IMMUNE COMPLEXES

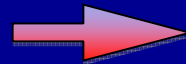
CONTINUOUS PRODUCTION S AUREUS ANTIGEN

DURING INFECTION



POST-STREPTOCOCCAL GN

SUPERANTIGEN



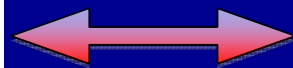
POLYCLONAL IgA IgG IgM

S AUREUS-ASSOCIATED GLOMERULONEPHRITIS

GLOMERULAR DEPOSITION OF IMMUNE COMPLEXES

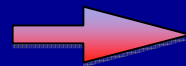
CONTINUOUS PRODUCTION S AUREUS ANTIGEN

DURING INFECTION



POST-STREPTOCOCCAL GN

SUPERANTIGEN



POLYCLONAL IgA IgG IgM

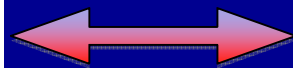
INTERACTION S AUREUS ANTIGEN  IgA

S AUREUS-ASSOCIATED GLOMERULONEPHRITIS

GLOMERULAR DEPOSITION OF IMMUNE COMPLEXES

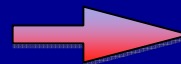
CONTINUOUS PRODUCTION S AUREUS ANTIGEN

DURING INFECTION



POST-STREPTOCOCCAL GN

SUPERANTIGEN



POLYCLONAL IgA IgG IgM

INTERACTION S AUREUS ANTIGEN  IgA



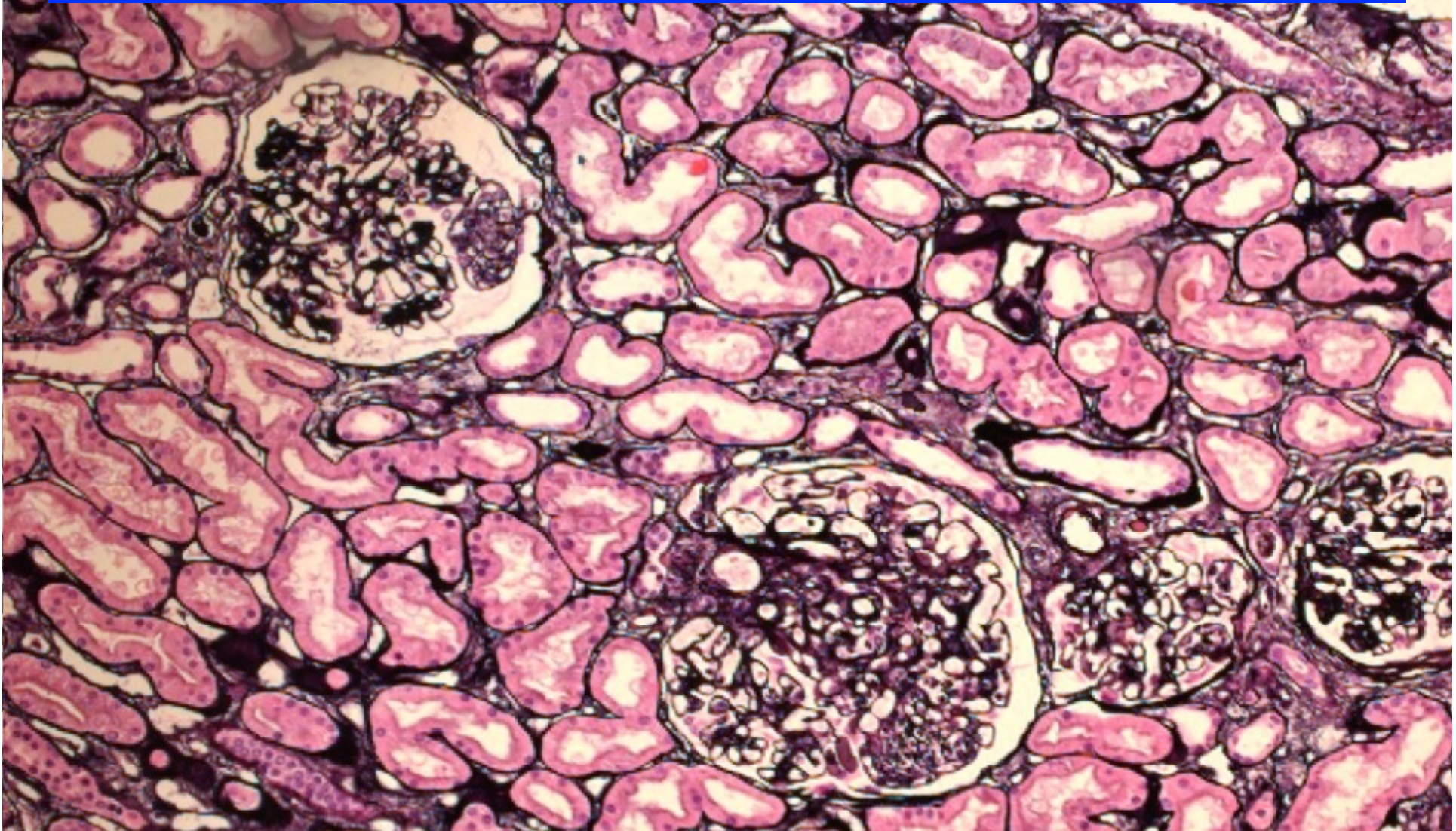
HEAVY IgA DEPOSITION



MISDIAGNOSIS AS IgA NEFROPATHY

S AUREUS-ASSOCIATED GLOMERULONEPHRITIS

DIFFUSE ENDOCAPILLARY PROLIFERATIVE AND EXUDATIVE

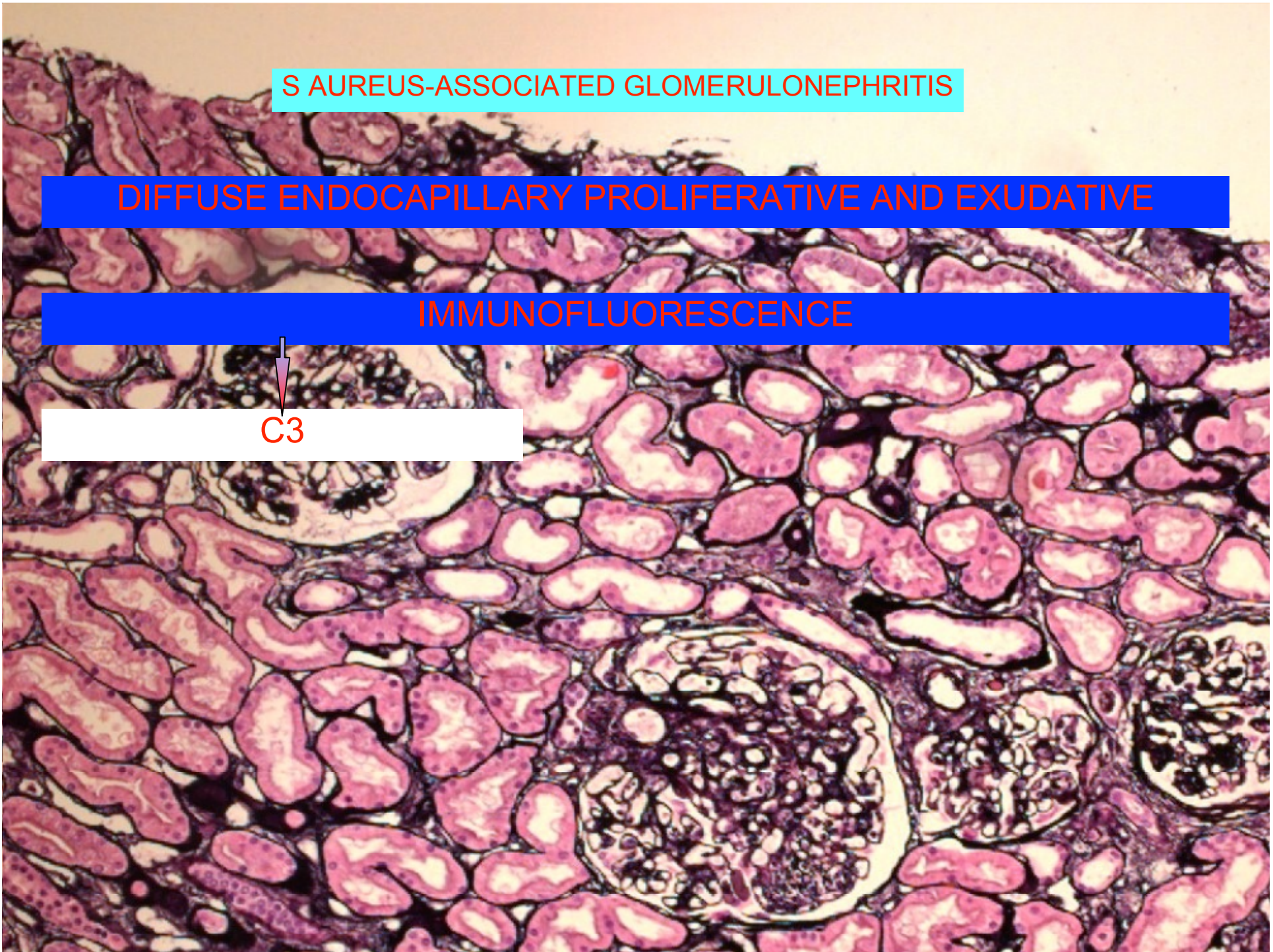


S AUREUS-ASSOCIATED GLOMERULONEPHRITIS

DIFFUSE ENDOCAPILLARY PROLIFERATIVE AND EXUDATIVE

IMMUNOFLUORESCENCE

C3



S AUREUS-ASSOCIATED GLOMERULONEPHRITIS

DIFFUSE ENDOCAPILLARY PROLIFERATIVE AND EXUDATIVE

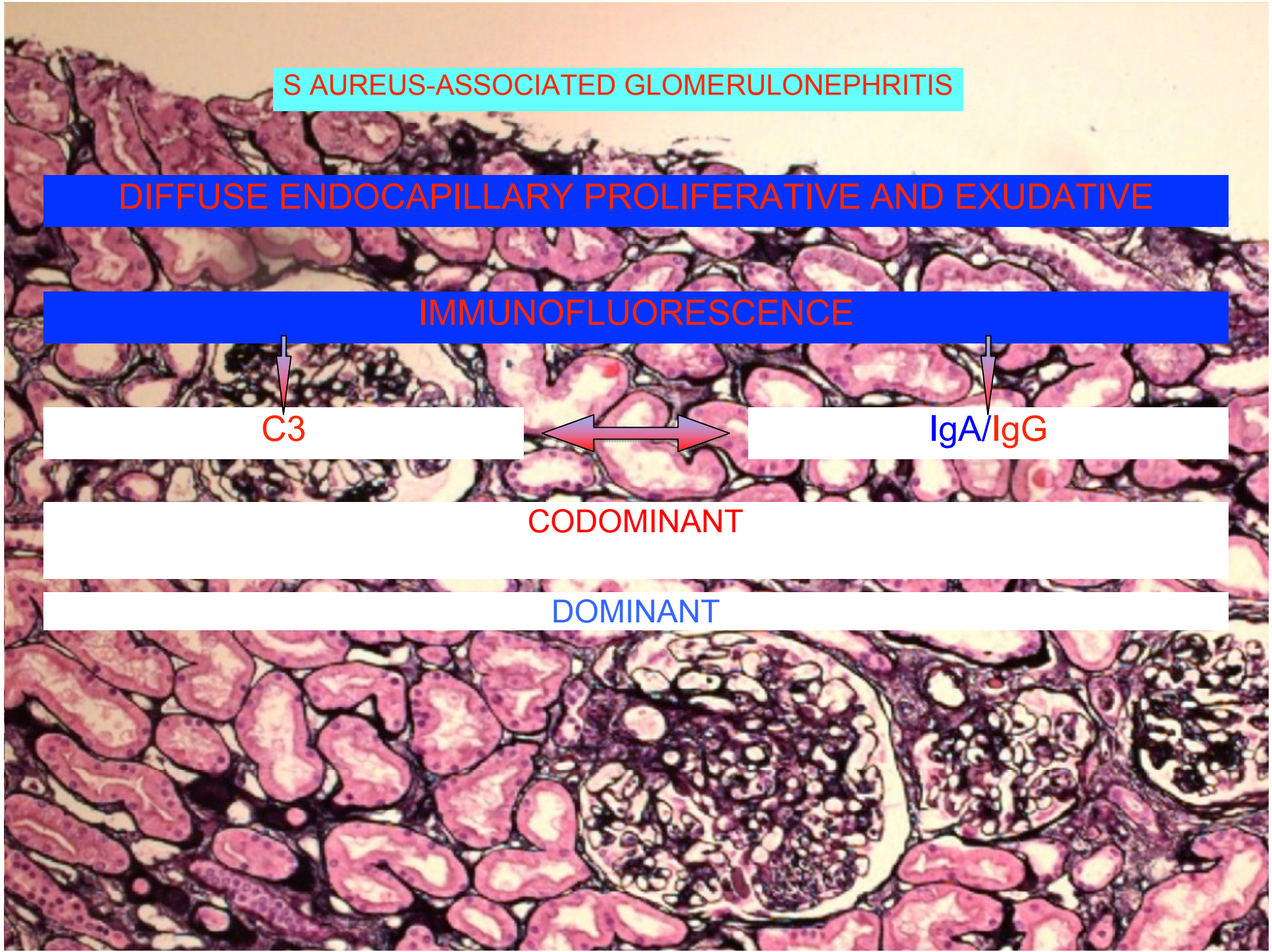
IMMUNOFLUORESCENCE

C3

IgA/IgG

CODOMINANT

DOMINANT



S AUREUS-ASSOCIATED GLOMERULONEPHRITIS

DIFFUSE ENDOCAPILLARY PROLIFERATIVE AND EXUDATIVE

IMMUNOFLUORESCENCE

C3

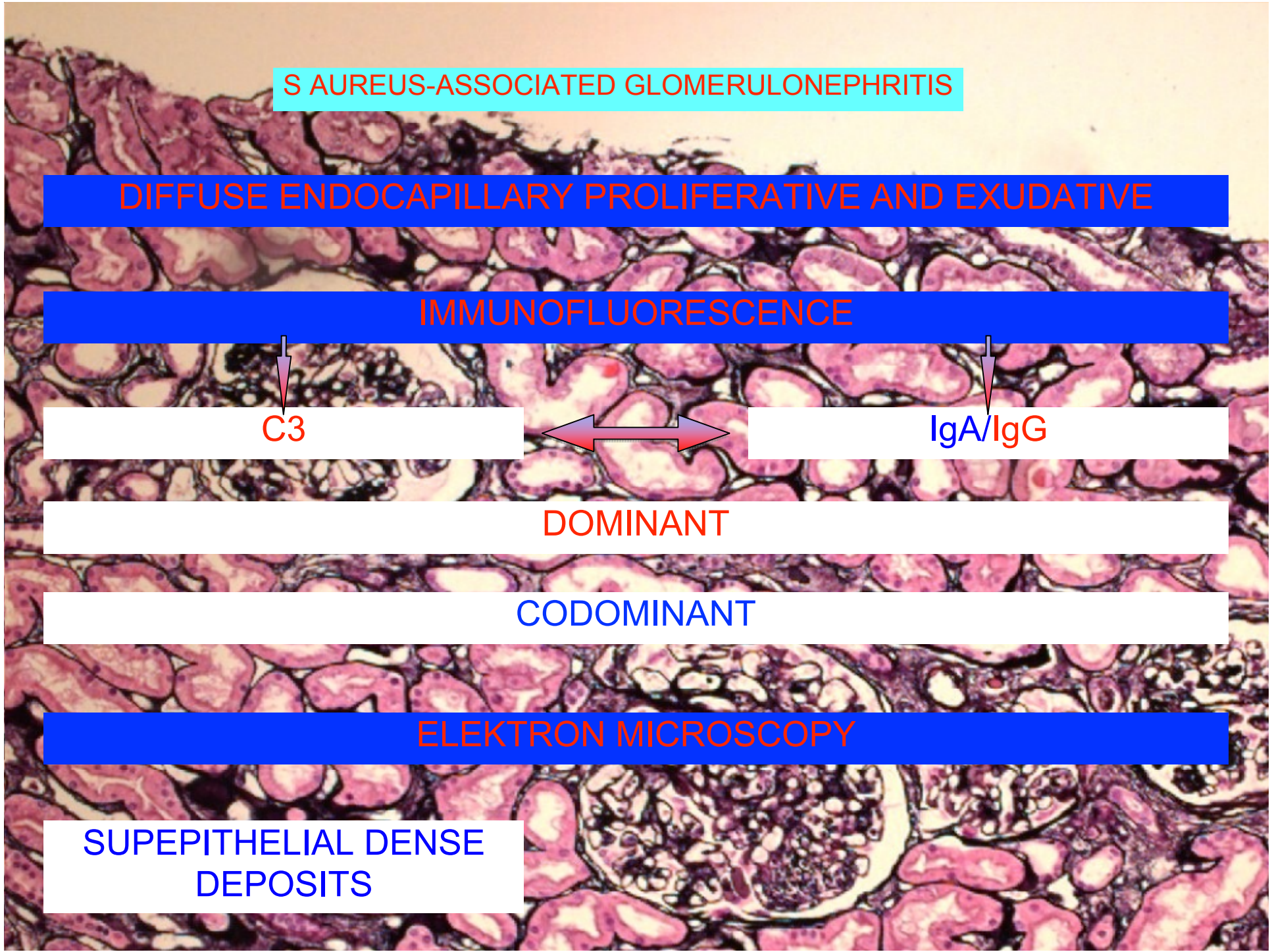
IgA/IgG

DOMINANT

CODOMINANT

ELEKTRON MICROSCOPY

SUPEPITHELIAL DENSE
DEPOSITS



S AUREUS-ASSOCIATED GLOMERULONEPHRITIS

CLINICAL MANIFESTATIONS

PROTEINURIA

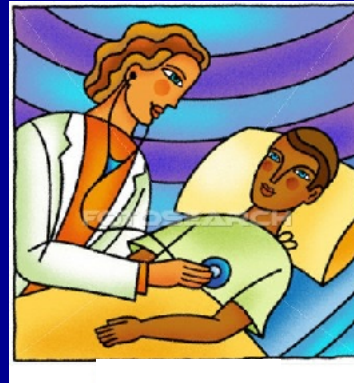
AKI

1/3 NEPHROTIC SYNDROME

MICROSCOPIC HEMATURIA

HYPERTENSION

OEDEMA



MIDDLE AGED

IMMUNOCOMPROMISED

CONCURRENT INFECTION

DIABETES

S AUREUS-ASSOCIATED GLOMERULONEPHRITIS

DIFFERENTIAL DIAGNOSIS

IgA Nephropathy and C3 glomerulonephritis

CLINICAL

LABORATORY TESTS

HISTOLOGY

S AUREUS-ASSOCIATED GLOMERULONEPHRITIS

DIFFERENTIAL DIAGNOSIS

IgA Nephropathy and C3 glomerulonephritis

CLINICAL

OLDER/DIABETES

LABORATORY TESTS

AKI/HEMATURIA

COMPLEMENT

HISTOLOGY

DIFFUSE EXUDATIVE GN

C3 ON IF

SUBEPITHELIAL HUMPS ON EM

S AUREUS-ASSOCIATED GLOMERULONEPHRITIS

DIFFERENTIAL DIAGNOSIS

IgA Nephropathy and C3 glomerulonephritis

CLINICAL

MACROSCOPIC HEMATURIA

PERSISTENT DISEASE

LABORATORY TESTS

COMPLEMENT

HISTOLOGY

C3, NO IgG

LOCATION OF DEPOSITS ON EM

S AUREUS-ASSOCIATED GLOMERULONEPHRITIS

DIFFERENTIAL DIAGNOSIS

Post streptococcal glomerulonephritis

CLINICAL

SITE OF INFECTION

CONCURRENT
INFECTION

CUTANEOUS
VASCULITIS

S AUREUS-ASSOCIATED GLOMERULONEPHRITIS

DIFFERENTIAL DIAGNOSIS

SLE, ANCA VASCULITIS

CLINICAL

LABORATORY TESTS

COMPLEMENT

AI

HISTOLOGY

HOW WOULD YOU TREAT THIS PATIENT?

CONTINUE ANTIBIOTICS, DIURETICS

CONTINUE ANTIBIOTICS, PLASMAPHERESIS

CONTINUE ANTIBIOTICS, PLASMAPHERESIS, DIALYSIS

STOP ANTIBIOTICS, DIURETICS, STEROIDS

STOP ANTIBIOTICS, DIURETICS, ANTIHYPERTENSIVES

CONTINUE ANTIBIOTICS, DIURETICS, ANTIHYPERTENSIVES

HOW WOULD YOU TREAT THIS PATIENT?

CONTINUE ANTIBIOTICS, DIURETICS

CONTINUE ANTIBIOTICS, PLASMAPHERESIS

CONTINUE ANTIBIOTICS, PLASMAPHERESIS, DIALYSIS

STOP ANTIBIOTICS, DIURETICS, STEROIDS

STOP ANTIBIOTICS, DIURETICS, ANTIHYPERTENSIVES

CONTINUE ANTIBIOTICS, DIURETICS, ANTIHYPERTENSIVES

S AUREUS-ASSOCIATED GLOMERULONEPHRITIS

TREATMENT AND PROGNOSIS

ERADICATE INFECTION

TREAT HYPERTENSION AND OEDEMA

PROGNOSIS

56% Complete Remission

27% Persistent Renal Dysfunction

17% ESRD

STAPHYLOCOCCUS-ASSOCIATED GLOMERULONEPHRITIS IN A PATIENT WITH DM: DIAGNOSTIC PITFALLS

DISCUSSION

Nasr SH, Radhakrishnan J, D'Agati VD. Bacterial infection-related glomerulonephritis in adults. *Kidney Int* 2013; 83:792.

Nasr SH, Markowitz GS, Stokes MB, et al. Acute postinfectious glomerulonephritis in the modern era: experience with 86 adults and review of the literature. *Medicine (Baltimore)* 2008; 87:21

Satoskar AA, Nadasdy G, Plaza JA, et al. Staphylococcus infection-associated glomerulonephritis mimicking IgA nephropathy. *Clin J Am Soc Nephrol* 2006; 1:1179.