

# **RENAL DOPPLER IN EVALUATION OF ACUTE RENAL FAILURE (ARF)- A PROSPECTIVE STUDY**

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# Basis

## n ARF

- Medical emergency
- Early diagnosis and intervention is vital
- Investigations to identify the type of ARF are imperfect
- Renal biopsy is the golden standard
- New non-invasive reproducible investigation is welcome

# Basis

## n USG Color Doppler

- Non-invasive, Freely available
- Serial study possible
- Its usefulness in renovascular and Tx setting has been already established

# Aims

- n Study the Doppler pattern of intrarenal vessels in different types of ARF.
- n To analyze its usefulness in differentiating the type of ARF
- n To see if severity of renal failure can be correlated

# Methods

## – study population

- n Consecutive cases of ARFs

- n ARF

  - n Rapid rise in creat above 1.5 mg

  - n No underlying chronic renal disease

  - n Normal sized kidneys

- n Exclusion

  - n Obstruction

  - n Renovascular

  - n Renal Transplant

# Methods – study population

- n Study group divided into glomerular (GN) and non glomerular - tubular/tubulointerstitial (TI)
- n Glomerular
  - Renal biopsy
  - Significant (>2 gm/day ) proteinuria
  - Sediments – RBC, RBC casts
  - Low C3, when available
- n Tubular/ Tubulo-interstitial
  - Renal Biopsy
  - Clinical setting
  - Insignificant proteinuria

# ARF Causes

n Post diarrhea

n Snake bite

n Malaria

n Post partum

n Septicemia

n Drugs

– Amino

– NSAIDS

– Others

n RPGN

n DPGN

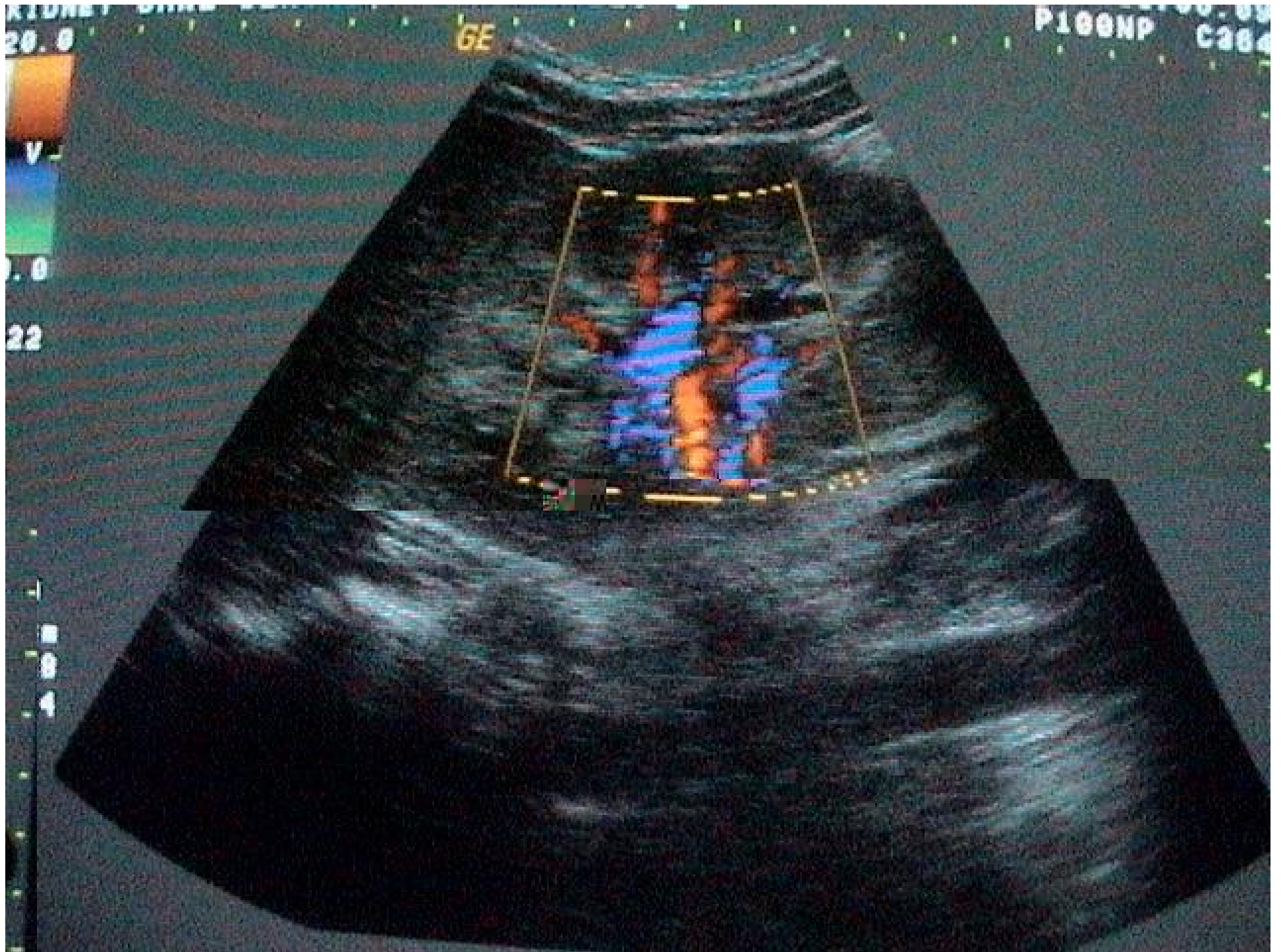
n PIGN

n IgAN

# Methods - Doppler

- n Wipro-GE Logic 400
- n 5 MHz curved probe
- n Single observer
- n Average RI, PI of interlobar artery
- n Doppler study done when the creat level is highest
- n Serial studies whenever the results are abnormal





20.0

GE

01-18-2005

# 2 RT INTERLOB

V -

0.0

622

2.5

3.00

V3.2

V6

3

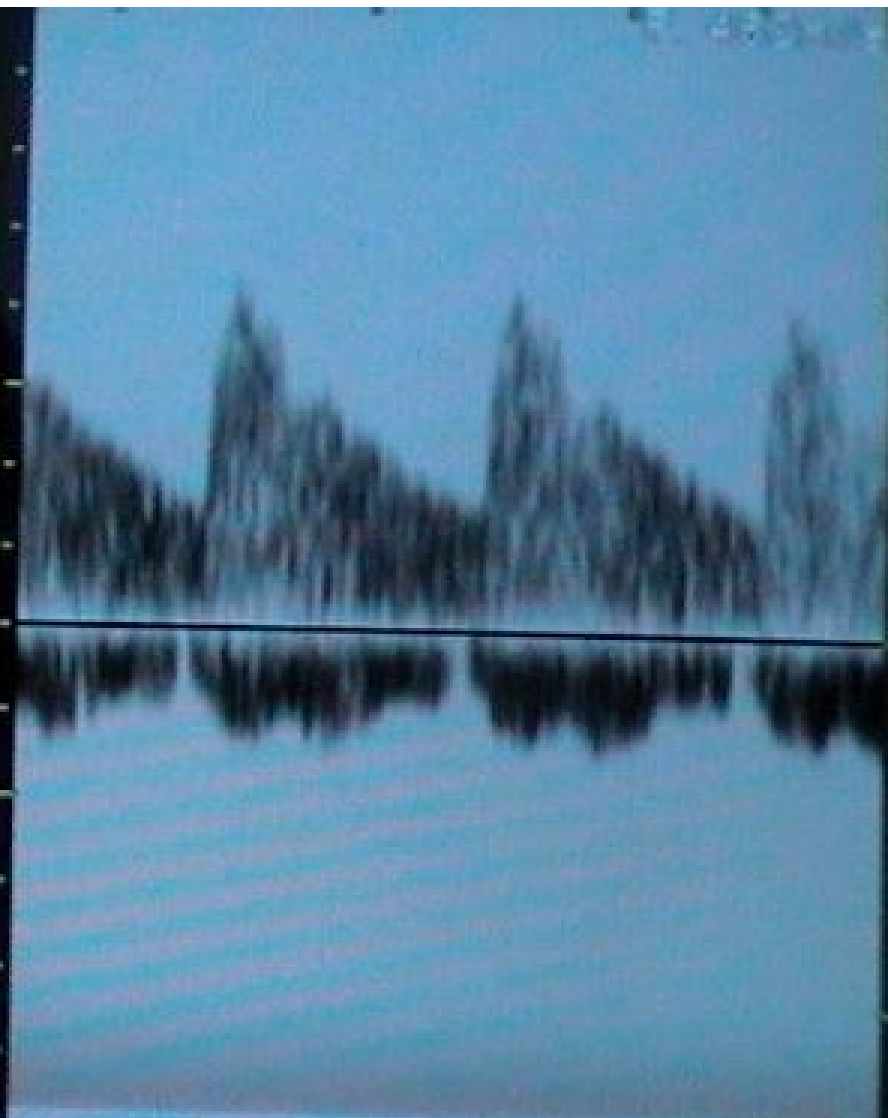
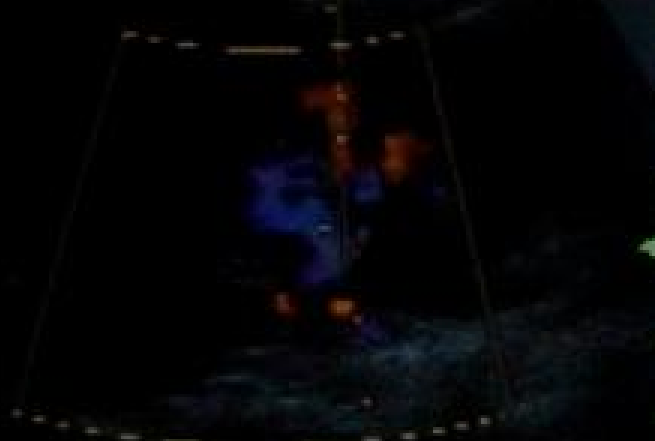
618

N0

5cm

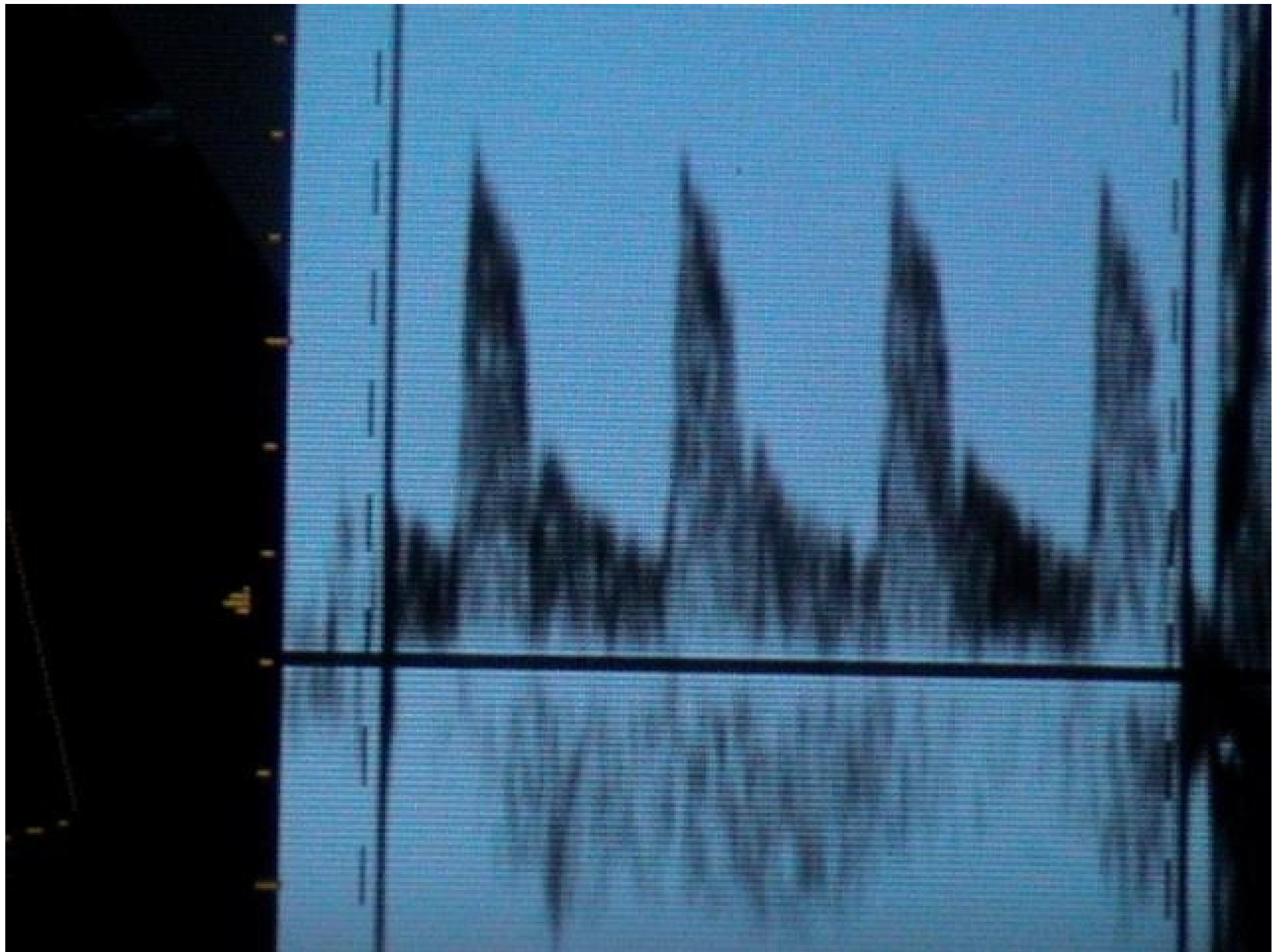
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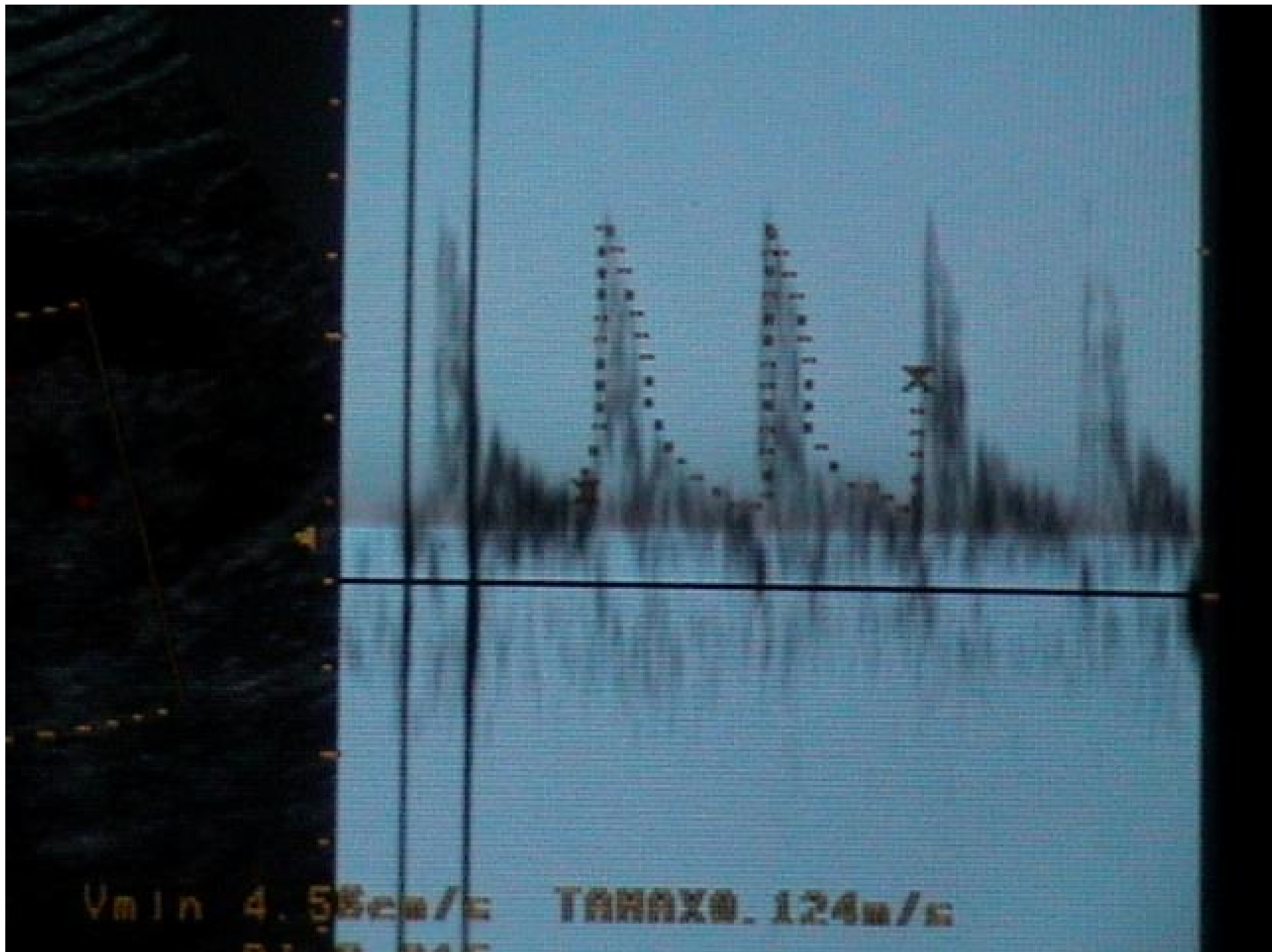
54



Vmax	0.245m/s	Vmin	7.85cm/s	TAMAX	0.157m/s
PI	1.000	RI	0.680		
Vmax	0.201m/s	Vmin	7.36cm/s	TAMAX	0.138m/s
PI	0.924	RI	0.634		

TIS=0.6





# Results – Study group

n Total –83

n Age : 7 to 75 Mean – 41.5 +/- 16

n Creat : 2 to 11.7 Mean - 4 +/- 2.4

n RI : Mean 0.72 +/- 0.09

n PI : Mean 1.35 +/- 0.35

n AGN : Total 43 Age 39 +/- 16

n AIN : Total 40 Age 43.9 +/- 16

n AGN : RI 0.68 +/- 0.06

n AIN : RI 0.75 +/- 0.1 p < 0.01

# Results – Study group

	No	Age	M/F	Creat
GN	43	39	23/20	4.1
TI	40	43.9	22/18	4.9
p	NS	NS	NS	NS

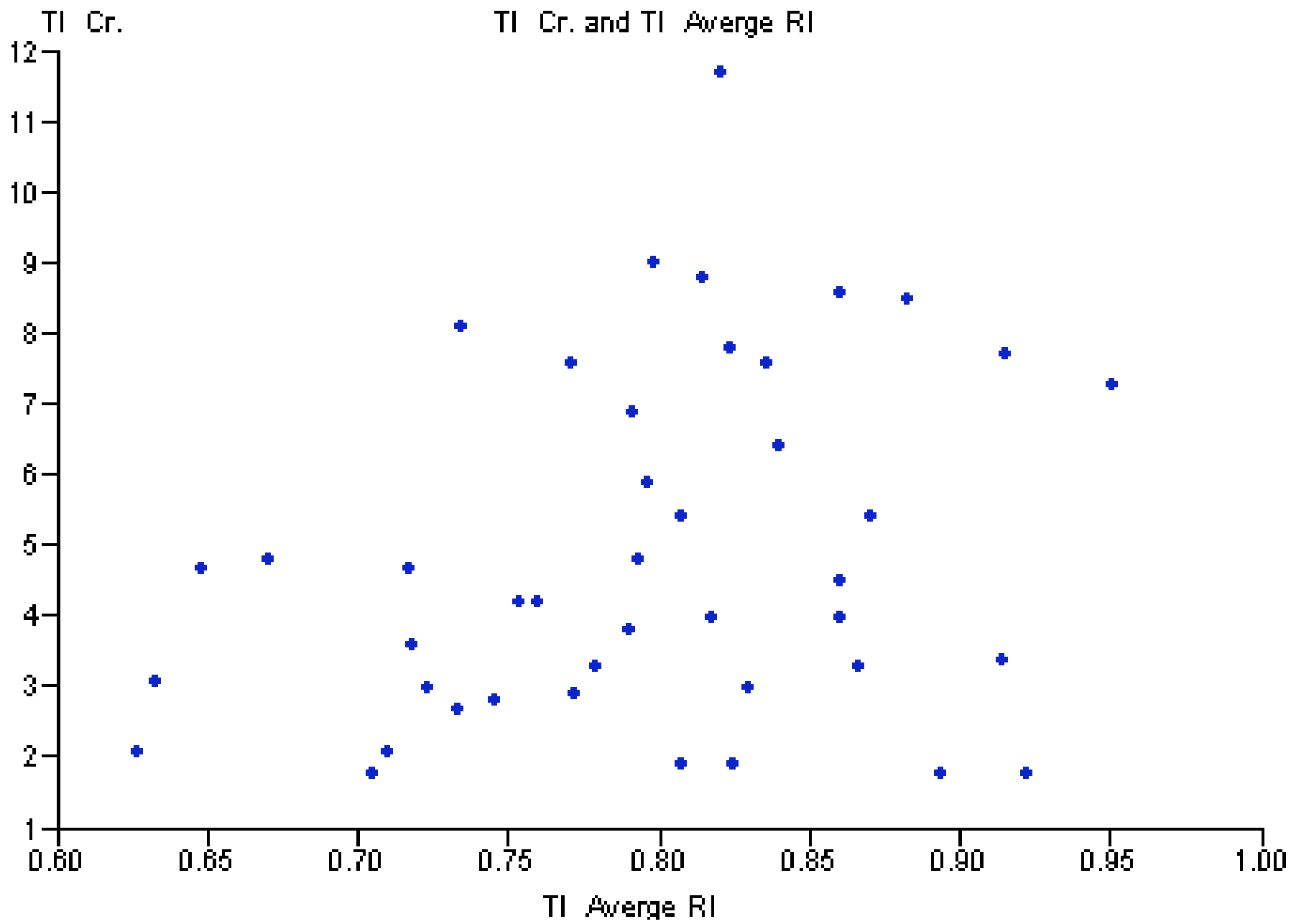
# Results

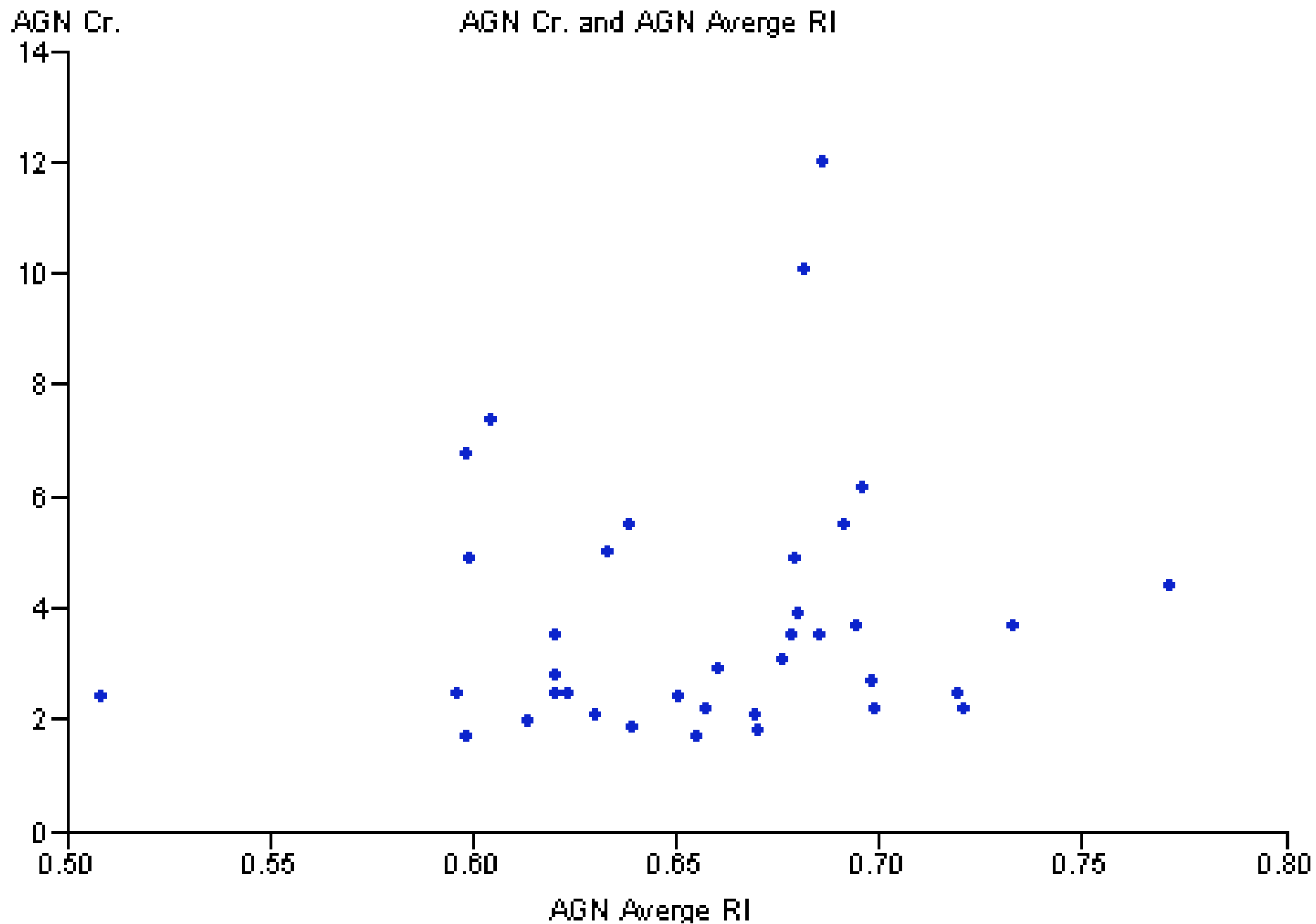
	RI mean	PI mean	Creat
GN	0.675	1.131	4.1
TI	0.753	1.454	4.9
p	<0.05	<0.05	>0.1

# Results

	GN	TI	p
RI >0.8	0	22	<0.01
RI >0.75	5	27	<0.01
RI <0.7	31	14	<0.05









# Conclusions

1. In ARF, RI and PI of interlobar artery are significantly higher in Tubulo interstitial (TI) than glomerular disease (GN).
2. In ARF due to GN the RI and PI are normal however severe is the renal failure
3. There is positive correlation between RI/PI and severity of renal failure in ARF due to Tubulo interstitial (TI) diseases.
4. USG colour doppler study is a useful tool in evaluation and management of ARF