

# Clinico-pathological correlates of Chemotherapy Response Score in Ovarian Cancer

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## INTRODUCTION

- Ovarian cancer 4<sup>th</sup> most common in women worldwide, most lethal gynecological malignancy with 30% to 40% overall survival (OS) at 5 years
- Primary debulking surgery followed by postoperative platinum-based chemotherapy is the key to manage advanced ovarian cancer, recently, trend shifted towards neoadjuvant chemotherapy (NAC) followed by IDS [1,2]
- Chemotherapy response score (CRS) is done on omental tissue sections to assess NACT response in tubo-ovarian high grade serous ovarian cancer(HGSC). It showed significant association with Progression Free Survival (PFS) [3] and Platinum Free Interval (PFI)

## AIMS AND OBJECTIVES

- To study PFS and PFI among different CRS groups.
- To correlate with Systemic inflammatory response markers

## MATERIALS AND METHODS

- CRS score was routinely introduced in the reporting system of carcinoma ovary by the Department of Pathology in Tata Medical Center since 2016
- Inclusion criteria:
  - Study group 1: 61 patients of HGSC whose CRS score data was available in the electronic medical records from 2016 to 2018.
  - Study group 2: 30 /61 patients whose 1 year follow-up was available.

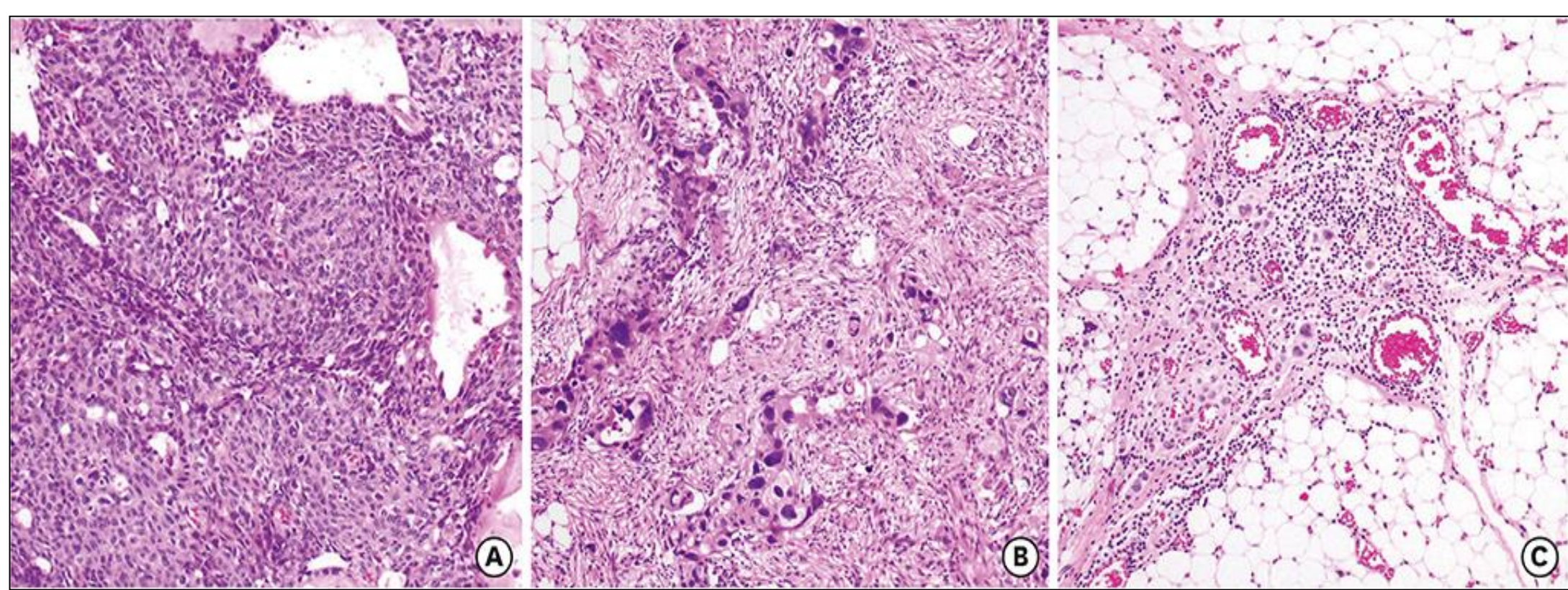


Fig 1: Histopathological features after NACT of Omentum H&E 10x. (A) CRS 1: no or minimal tumor response. (B) CRS 2: appreciable tumor response with viable, identifiable tumor. (C) CRS 3: complete or near-complete response with no or minimally residual tumor

## RESULTS

Table 1: Baseline characteristics of 61 patients.

Median Age	55 (26-71)
Stage	
III	24
IV	36
NA	1
NACT Cycles	
3 or 4	48
>4	13
Regimen of NACT	
Pacitaxel+Carboplatin	53
Carboplatin	4
Pacitaxel+Carboplatin+Bevacizumab	3
Mitotax	1

Table 2: Distribution of CRS in omentum site.

N=61	CRS1	CRS2	CRS3
Omentum	16.3%	59%	24.6%

Table 3: Correlation Of CC score with CRS group.

N=61	CC0 (N,%)	CC1 (N,%)	CC2 (N,%)	CC3 (N,%)
CRS1	4 (11.43%)	3 (17.65%)	1 (20%)	2 (66.67%)
CRS2	17 (48.57%)	13 (76.47%)	4 (80%)	1 (33.33%)
CRS3	14 (40%)	1 (5.88%)	0	0

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N=61	Median Baseline CA125	Median Post NACT CA125	Amount of fold reduction post NACT
CRS1	1495	47.3	31.6
CRS2	1599.5	51.035	31.34
CRS1+2	1547.25	49.17	31.47
CRS3	1890	27.15	69.61

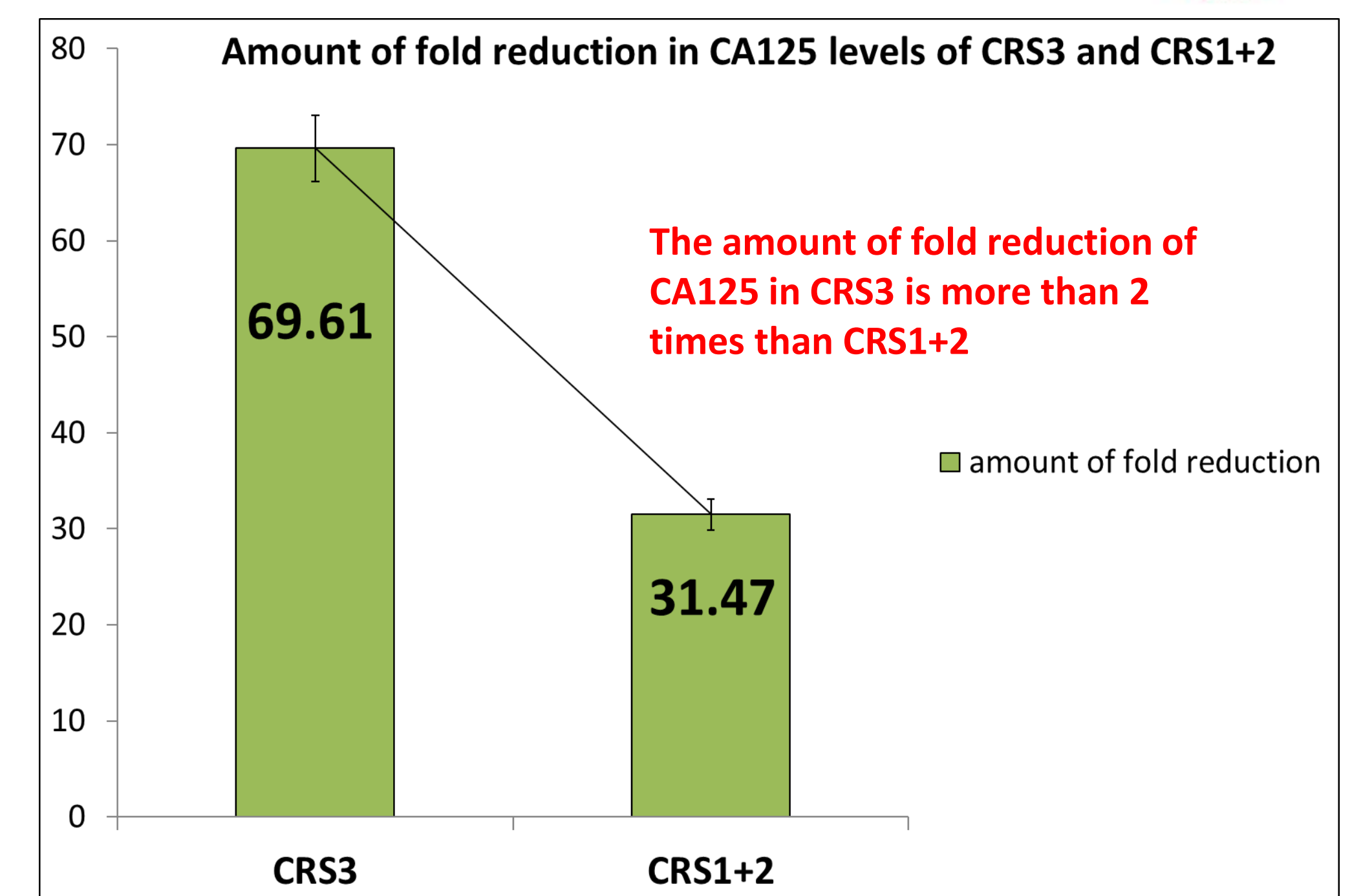
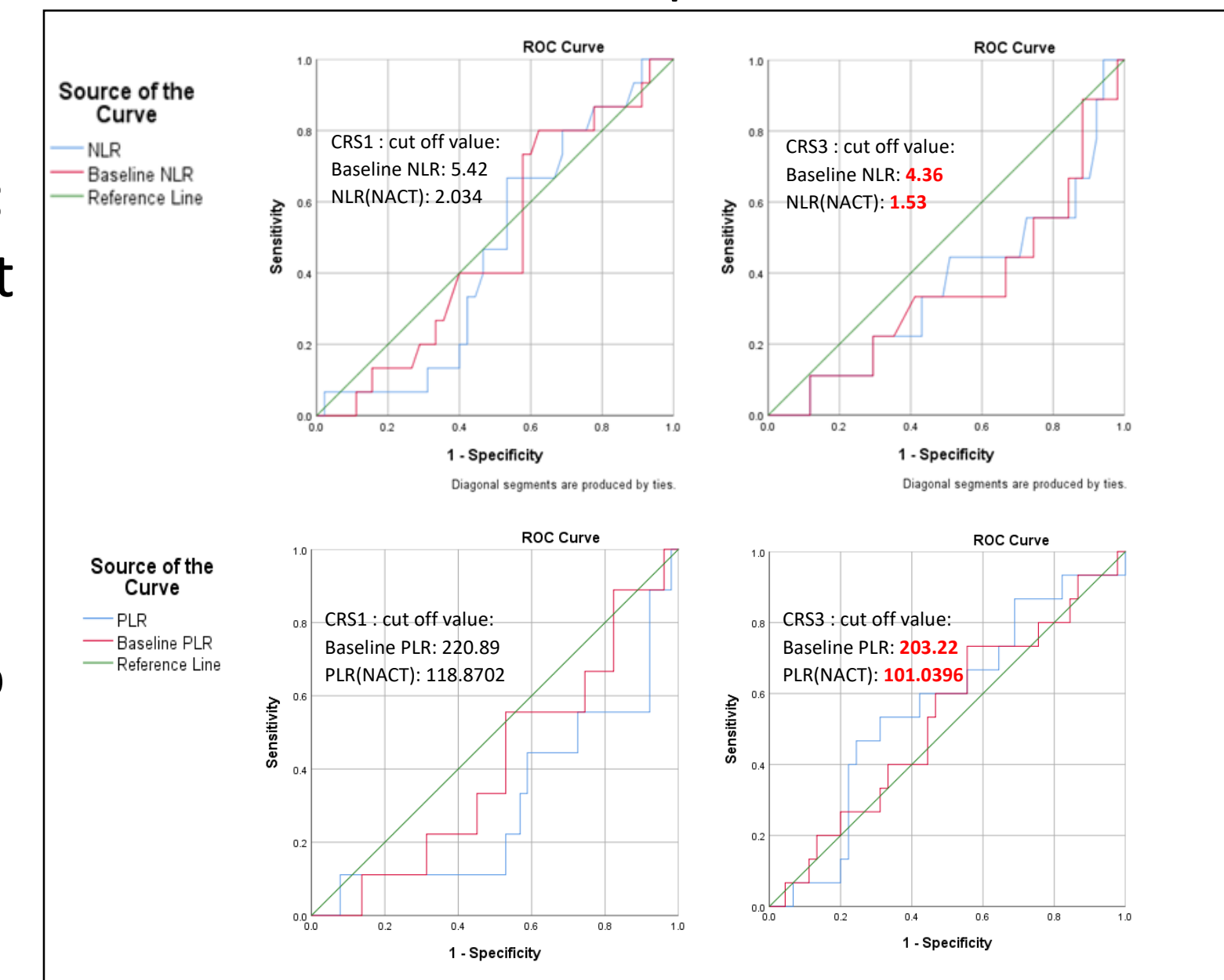


Fig. 2 & Table 4 : Greater amount of reduction of CA125 values post NACT in CRS3 as compared to CRS 1+2

N=61	Cut off from ROC Curve			
	Baseline NLR	Post NACT NLR	Baseline PLR	Post NACT PLR
CRS1	5.42	2.034	220.89	118.87
CRS2	4.86	1.82	240.88	111.48
CRS3	4.36	1.53	203.22	101.03

Table 5 & Fig 3: NLR and PLR cut off values obtained from ROC curves, is higher in CRS1 as compared to CRS3



PFI (N=30)	≤6 M		>6 M	
	CRS1	CRS2	CRS1	CRS2
CRS1	2 (15.38%)	10 (76.92%)	4 (23.52%)	8 (47.05%)
CRS2	1 (7.69%)	5 (29.41%)		

Table 6: CRS score vs. Platinum Free Interval

PFS (N=30)	≤12 M		>12 M	
	CRS1	CRS2	CRS1	CRS2
CRS1	27.27%	54.54%	15.78%	63.15%
CRS2	81.81%	18.18%	78.94%	21.05%

Table 7: CRS score vs. Progression Free Survival

N=41	Normal	BRCA mutation
CRS1	3	1 (25%)
CRS2	18	8 (30%)
CRS3	6	5 (45%)

Table 8: Comparison of BRCA with CRS score

## DISCUSSIONS

- CRS score correlated with CC score
- CRS3(69.61) shows more than 2 times fold reduction in CA125 level as compared to CRS1+2(31.47)
- High Neutrophil lymphocyte ratio (NLR), platelet lymphocyte ratio(PLR) before pretreatment predicts poor prognosis. [4,5]
- Our study, shows CRS 1 with higher NLR and PLR cut off values, in comparison to CRS3,supportive of other studies
- CRS 3 identifies patients to have low probability of primary platinum resistant disease.
- CRS 3 shows more Progression Free Survival (PFS) in comparison toCRS 1 in more than 1 year
- 45% BRCA mutation among CRS3, indicating good prognosis.

## CONCLUSION

- CRS system stratification helps to predict the prognosis and outcome of the patients. It is easy, affordable and reliable.

## FUTURE DIRECTIONS

- Translational studies to look for molecular markers along with CRS in progress.
- Preliminary work on immunohistochemistry, FACS on cancer stem cell/ EMT markers are still going on in order to find out some prognostic or predictive marker.