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**Early detection of Arterio-Venous Fistula (AVF) complications**

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**Case Study :** Background and Aims: Vascular access (VA) dysfunction is a major clinical complication in the hemodialysis (HD) patients, where neointimal hyperplasia results in vascular stenosis and subsequent thrombosis, which lead to vascular access failure. Interleukin-10 (IL-10), hs CRP, & tumor necrosis factor- (TNF- $\alpha$ ) are inflammatory markers involved in the process neointimal hyperplasia & subsequent complications. We aimed to evaluate the value of these inflammatory markers in early detection of arterio-venous fistula (AVF) failure, in pediatric patients on regular HD. Method: A prospective cohort included 59 pediatric chronic kidney disease patients' stage 5, on regular HD (CKD5d). AVF examination, Venous pressure (VP) & trans-membrane pressure (TMP) were recorded at each HD session, to detect any abnormalities. Doppler ultrasound (DUS) was performed/ 3 months & at the time of AVF complications. Measuring IL10, TNF, hs CRP were done prior to, and at the time of development complications, which were clinically & radiologically confirmed. Results: The mean ( $\pm$  SD) age of our patients was 13.97 ( $\pm$ 2.65) years., Thrombosis was the most common AVF complications (28.8%), followed by aneurysm formation in (23.7%), stenosis (10%), early VA failure (3.4%), pseudoaneurysm & perivascular hematoma (1.7%). Serum levels of Hs-CRP, TNF- $\alpha$ , IL-10 were elevated at timing of early development of complication, in comparison to their baseline levels, meanwhile serum IL10, and TNF alpha were significantly higher among patients who developed AVF stenosis. The baseline hs-CRP had related positively with AVF diameter at the time of the development of the complications. Conclusion: The inflammatory markers though elevated at time of AVF complications, however have no clinically applied role in early detection of AVF abnormalities, therefore, physical examination and DUS are deemed sufficient.

AVF .png

Inflammatory markers	Mean ( $\pm$ SD.)	P value
Hs- CRP baseline (ng/mL)	0.08 ( $\pm$ 0.08)	0.041*
Hs- CRP at time of complication (ng/mL)	0.16 ( $\pm$ 0.28)	
IL10 baseline (pg/mL)	1.31 ( $\pm$ 2.88)	0.036*
IL10 at time of complication (pg/mL)	1.36 ( $\pm$ 1.30)	
TNF-alpha baseline (pg/mL)	13.39 ( $\pm$ 11.99)	0.063
TNF-alpha at time of complication (pg/mL)	16.85 ( $\pm$ 10.02)	