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Title: Biochemistry and biomarkers of inflamed patients: why look, what to assess.

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Overview:

This review article examined the medical implications of inflammation in clinical practice and its effect on dialysis patients. Correctible causes of inflammation were identified, including periodontal disease.

Summary:

- Inflammation is related to specific clinical outcomes
- Changes in clinical practice may affect level of inflammation in dialysis patients
- Inflammation is strongly associated with the loss of physical function, cardiovascular events, increased hospitalization and death.
- Correctible causes of inflammation include; tunneled dialysis catheters, arteriovenous grafts, catheter infection and periodontal disease, among others.

Results and conclusions:

- Inflammation is multifactorial in dialysis patients
- Some sources of inflammation are identifiable and others are not
- Inflammation is strongly associated with outcome

Key take-aways:

Inflammation has a high prevalence and plays a significant role in the clinical outcomes of dialysis patients. Identifiable and correctible sources of inflammation include periodontal disease. Treating every periodontal patient, every time they present to our care, with any level of periodontal disease is central to oral and general health, especially for those with an increased risk of kidney disease and other systemic conditions.

Implementation Strategies:

As research begins to point to specific conditions of concern, such as patients on dialysis, we must be talking about these health risks with all of our patients all of the time. While the patient in the chair may not have this specific health issue the chances of them knowing a friend or loved one who is struggling to maintain health during dialysis is quite high.

While doing research on dialysis, we have found that *diabetes* is one of the most common risk factors for the development of renal disease as is hypertension. Most diabetics have periodontal disease, which increases the risk for diabetic complications including renal disease.

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According to the 2009 United States Renal Data Systems (USRDS) annual data report the incidence of renal disease in persons aged 75 years or more has gone up 10.4% since 2000, while the rate for persons aged 20-44 years has increased 5.5%. It is interesting to note that diabetes was the primary cause of renal disease for 54% of new cases in 2007 and that one in three patients had a primary diagnosis of hypertension. The rate of renal disease caused by hypertension has grown 8% since 2000.

It is clear that renal disease has links to diabetes and hypertension both of which we see in staggering numbers in our daily dental practices. Once again, these statistics point us back to the seriousness and necessity of early treatment and intervention of periodontal disease.

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