Fish Oils and Nephritis or Hypertension

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Dear Sirs,

In my article of October 1986 on Anticoagulation in Renal Diseases, I ended by aligning my views with Bar-cell^{li} and Pollack [1] in proposing that fish oils would prove to be of benefit in the nephritides. In so far as fish oil (eicosapentaenoic acid: EPA) therapy prevents platelet aggregation and gives rise to the 3-series of throm^{bo}-xanes and prostaglandins, rather than the powerful 2-series vasoconstrictors, there is the possibility of benefit. However, I now wish to add a note caution. It has been noted that fish-oil enriched diets enhance the synthesis of leukotrienes during anaphylaxis in guinea pigs [2]. This is because EPA blocks cyclooxygenase competitively and instead available arachidonate is metabolised by the lipoxygenase pathway [3]. If this is extrapolated to nephritis, it certainly means that in the acute situation (and probably in the chronic) there will be enhanced production of lipoxygenase products by the mesangial and epithelial cells. In other words the nephritic process will be potentiated because of the relative lack of protective prostaglandins (PGE² and PGI²). In fact in studies using human platelets, it has been observed that EPA curtails thromboxane formation but PGE² is also completely suppressed. At low concentrations of the EPA the production of HETE is enhanced [4]. Moreover, when macrophages (cf. mesangial cells) are examined in culture, EPA has been found to suppress prostaglandin synthesis and to enhance chemiluminescence [5]. Although it is unwise, in nutritional experiments, to deduce what will occur in man from findings in the rat or guinea pig, I think it is clear that the effects of EPA on experimental nephritis have to be carefully evaluated.

With respect to hypertension, although it is known that a mackerel diet or cod liver oil therapy can benefit human essential hypertension [6], rats fed on EPA exhibit depressed urinary excretion of prostanoids [7], and with salt loading EPA fed SHR show an increase of their blood pressure. Obviously in the case of renal hypertension preservation of medullary prostanoid synthesis is vital. The evidence to date is that EPA does not do this. There are more direct approaches for the therapy of human nephritis, namely the use of a thromboxane syn-thetase inhibitor (which will indirectly elevate prostacyc-^{lin} production) or of a leukotriene inhibitor (the first is available). For the time being a direct approach is more ethical. Also I think that those who use low protein diets for preservation of renal function should be prepared to state clearly what the P/S ratio of their particular regimen is.

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