Chapter two

Correspondence on age-related renal function decline
Significant negative association with age and both GFR and ERPF in male and female living kidney donors

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**Motive**

With ageing, functional changes occur within the kidney. In the general population, renal function is known to decline slowly over the years. Kidney donors however represent a part of the population that is in very good health. Does renal function decline with age in this group of subjects or is it preserved? Reports are conflicting, in particular when gender-related issues are addressed. In a population that is selected for good health, one should be careful in extrapolating results to the more heterogeneous general population.
Sir,
With interest we read the manuscript by Berg. She reports that glomerular filtration rate (GFR) and effective renal plasma flow (ERPF) were unrelated to age in 62 female potential kidney donors, whereas in 60 male potential donors, GFR and ERPF were lower in older subjects [1]. She concludes that effects of ageing on the kidney are gender-related. This conclusion, however, is not warranted without longitudinal data.

Moreover, the age-range in her study was relatively narrow, with few subjects aged over 50. Furthermore, subjects evaluated for kidney donation represent a healthier-than-average population, in whom risk factors for renal function loss over time are less prevalent [2]. Finally, the number of subjects studied was relatively small. These factors weaken the power to detect age related effects on renal function.

Therefore, we analysed our donor screening data (GFR: $^{125}$I-iothalamate, ERPF: $^{131}$I-hippuran) in 84 male (mean age 48, range 21–75) and 136 female (mean age 48, range 20–70) subjects.

In contrast to the data by Berg [1], a negative correlation between age and GFR and between age and ERPF was present not only in men, but also in women, which is shown in figure 1. The correlations persisted after exclusion of subjects aged over 50.

The slope in GFR was $-8.7 \text{ ml/min per decade}$ in male donors and $-7.0 \text{ ml/min per decade}$ in female donors. For ERPF, the slope was $-52 \text{ ml/min per decade}$.
in males and -30 ml/min per decade in females. Filtration fraction rose with age in men ($R^2=0.390, p\leq0.0001$) but not in women ($R^2=0.046, p=0.596$), supporting the relevance of gender for age-related effects on the kidney.

Longitudinal studies are required to elucidate the impact of gender on the natural course of renal function during ageing and its mechanisms.

Figure 1. Renal function decline with ageing.

The negative association between age and both glomerular filtration rate (GFR) and effective renal plasma flow (ERPF) exists in both male (left panels) and female (right panels) prospective kidney donors.
References

