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Editorial:

THE AGEING KIDNEY: A PROPOSAL FOR ITS CLASSIFICATION

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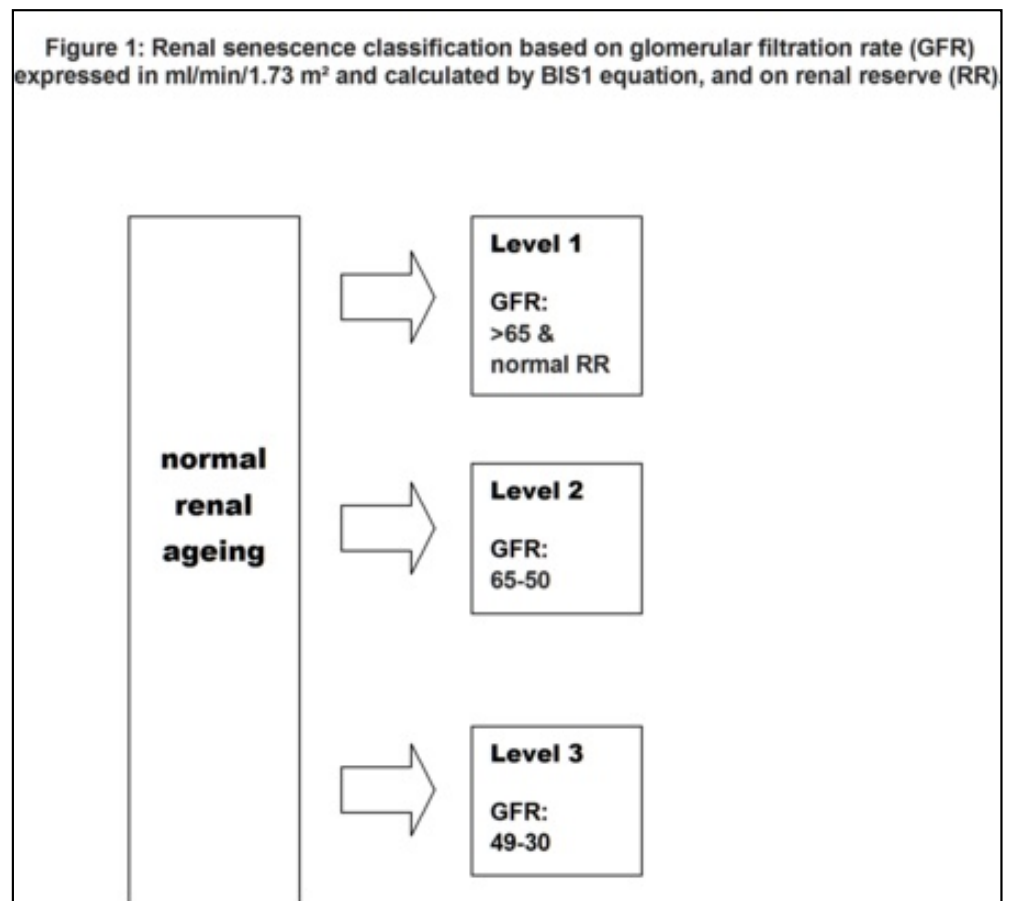carlos.musso @ hospitalitaliano.org.ar

Version en español

Renal senescence is characterized by a set of capabilities usually altered by ageing, such as a reduced glomerular filtration rate (GFR), free water clearance, potassium secretion, as well as sodium and water reabsorption[1]. However, renal senescence is clearly a different process from chronic renal disease since the aged kidney, conversely to chronic nephropathy, presents a GFR reduction without abnormal values neither in serum urea and creatinine levels, urinalysis (except for proteinuria ≤ 0.3 gram/day), nor renal imaging (except for a slightly reduced kidney size and /or isolated cysts) [2].

Moreover, glomerular filtration reduction induced by ageing shows a particular rate since it reduces around 1 ml/year since 40 years of age, a phenomenon which is not so predictable in chronic kidney disease [1]. In this sense, Keller et al. have described a practical equation for determining the expected GFR reduction related to the age (GFR: 130 - age), which is conceptually quite different from the classical estimating GFR

equations[3-4].

Nevertheless, it is worth pointing out that kidney senescence leads to a need of adjusting medication doses, as well as to an increased risk for developing acute renal failure; being these phenomena even more significant in the oldest old (age $\geq$ 80 years) [5-6].

Because of all mentioned above, we proposed to consider the aged kidney as a particular entity (kidney senility) different from the young kidney and the CKD, as well as to classify kidney senility (KS) in three levels (based on different GFR levels obtained by applying BIS1 equation, since it is the only GFR equation validated in the elderly [7-8] (Figure 1):

Figure 1: Renal senescence classification based on glomerular filtration rate (GFR) expressed in ml/min/1.73 m² and calculated by BIS1 equation, and on renal reserve (RR)

normal renal ageing

Level 1

GFR:
>65 &
normal RR

Level 2

GFR:
65-50

Level 3

GFR:
49-30

- Level I (successful KS): an elderly (age $\geq$ 65 years old) with a GFR $\geq$ 65 ml/min/1.72 m² (BIS1 equation) in a context of a preserved renal reserve (at least 20% of renal reserve), since its absence in a context of relative high GFR would mean the presence of hyperfiltration, and consequently renal disease.

- Level II: an old individual (age 65-79 years old) with a GFR between 65-50 ml/min/1.72 m^2 (BIS1 equation).

- Level III: a very old individual (age $\geq$ 80 years old) with a GFR between 49-30 ml/min/1.72 m^2 (BIS1 equation).

We consider that this originally proposed classification in different renal functional levels in the healthy elderly, which is based on gerontological and renal physiological concepts, could help to establish a common language among physicians who assist elderly patients, and/or investigate the renal senescence process

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