

# Safety, histologic findings and clinical impact of kidney biopsies in obese patients

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## Background

Overweight and obesity have turned into a “global pandemic” with 36.9% of men and 38% of women having, in 2013, a body mass index (BMI) over 25kg/m<sup>2</sup>. Obesity has long been associated with increased all-cause and cardiovascular mortality and with progressive kidney damage. Nephrologists are, nowadays, more often confronted with the issue of kidney biopsy in obese patients.

## Aim of the study

To assess the clinical indications, histologic findings and clinical impact of kidney biopsies in obese patients and to analyse the technique and safety of the procedure.

## Patients-methods

From 993 kidney biopsies performed in our department between 2000-2015, 169 (17%) concerned individuals with a BMI>30kg/m<sup>2</sup>. We retrospectively reviewed their charts, kidney biopsies and therapeutic regimens.

## Results

About half of the obese patients were male and half of them women with a median age of 50 years. More than half of the patients (54%) had a history of hypertension and 17.7% a history of diabetes. The percentage of obese patients who underwent a kidney biopsy rose from 10% between 2000-2005 to 15% between 2005-2010 and to 17% between 2010-2015 (figure 1). Classification of patients according to obesity class is shown in figure 2.

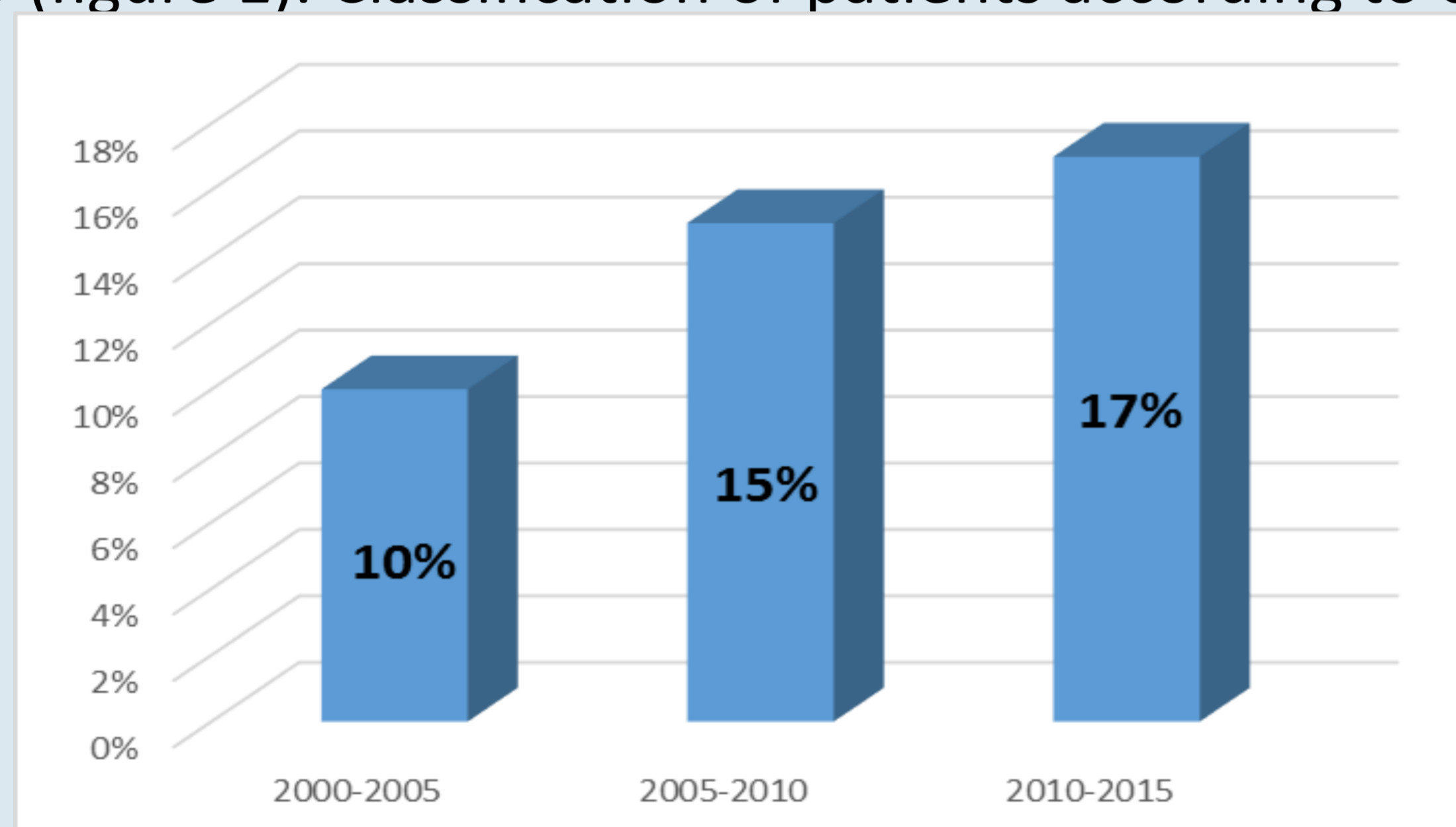


Figure 1. Frequency of obesity per 5 years.

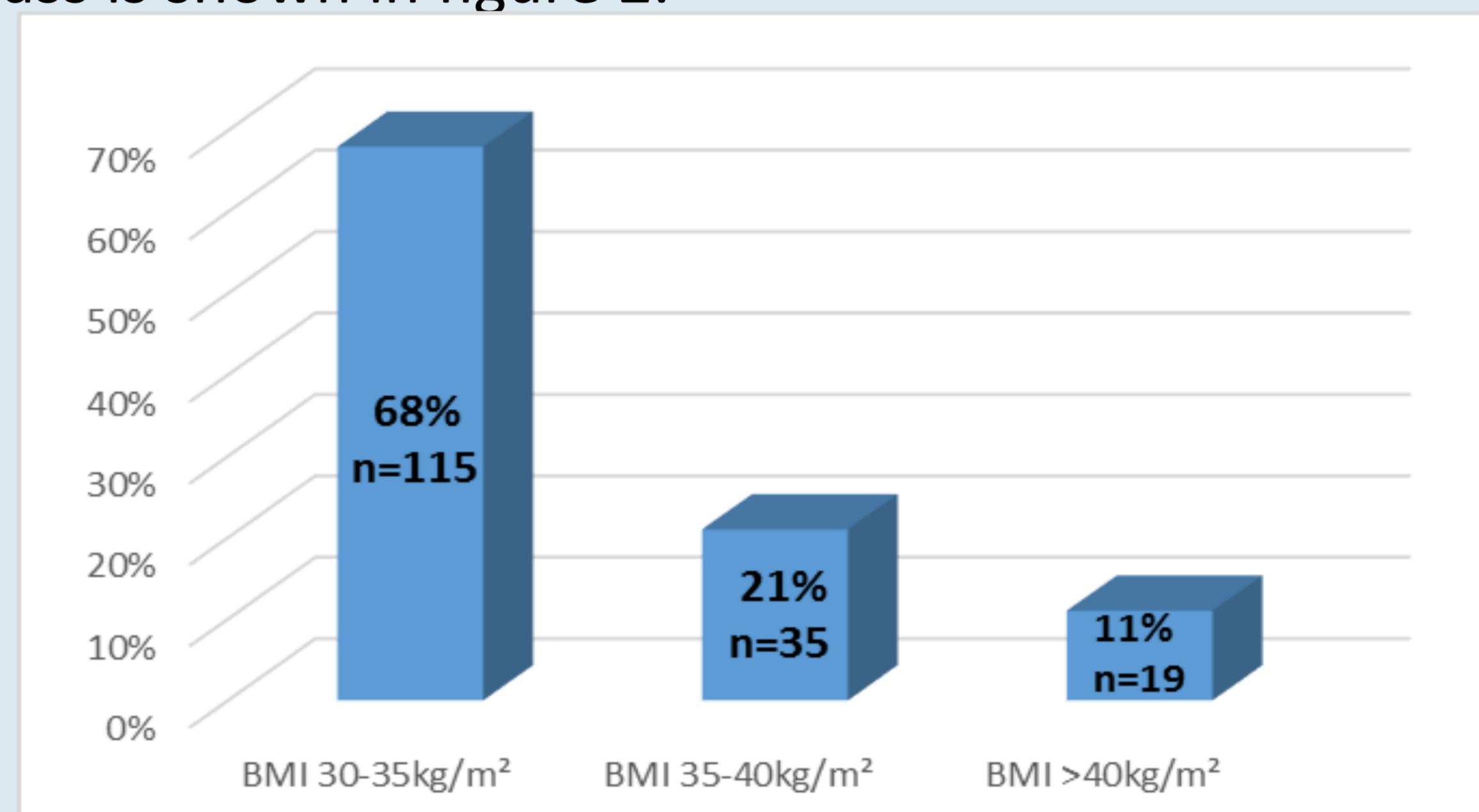


Figure 2. Classification of patients according to obesity class.

INDICATIONS FOR RENAL BIOPSY	
CLINICAL SYNDROME	PATIENTS
Isolated microscopic haematuria	8% (13/169)
Proteinuria <3.5g/24h±microscopic haematuria	37% (63/169)
Nephrotic range proteinuria	4% (7/169)
Nephrotic syndrome	32% (54/169)
Acute renal injury	3% (5/169)
Rapidly progressive GN/Nephritic syndrome	16% (27/169)

## Renal biopsy technique

Most patients (93.5%) underwent a percutaneous, ultrasound-marked renal biopsy with the same protocol applied to non obese patients. 3.5% of biopsies were CT-guided and in 3% of cases a surgical biopsy was performed. Mean number of glomeruli per section was 17±10.

## Complications

Total complication rate was 11%. Macroscopic haematuria which resolved spontaneously occurred in 8.3% of patients. In 1.7% bleeding required blood transfusion. There was one case of symptomatic perirenal hematoma and one case with major bleeding which needed selective renal artery embolization with stabilization and recovery thereafter.

## Histologic findings

Primary glomerulonephritis was diagnosed in 61% (103/169) and secondary glomerulonephritis in 27% (45/169) of patients. In 12% (21/169) there was a diagnosis of acute interstitial nephritis/acute tubular injury, non specific or chronic lesions (figure 3). Among primary glomerulonephritides, membranous nephropathy was the most common (18%) followed by FSGS (14%) (figure 4). Among secondary glomerulonephritides, lupus nephritis was the most common (16%) while diabetic nephropathy comprised only 3.5% (figure 3).

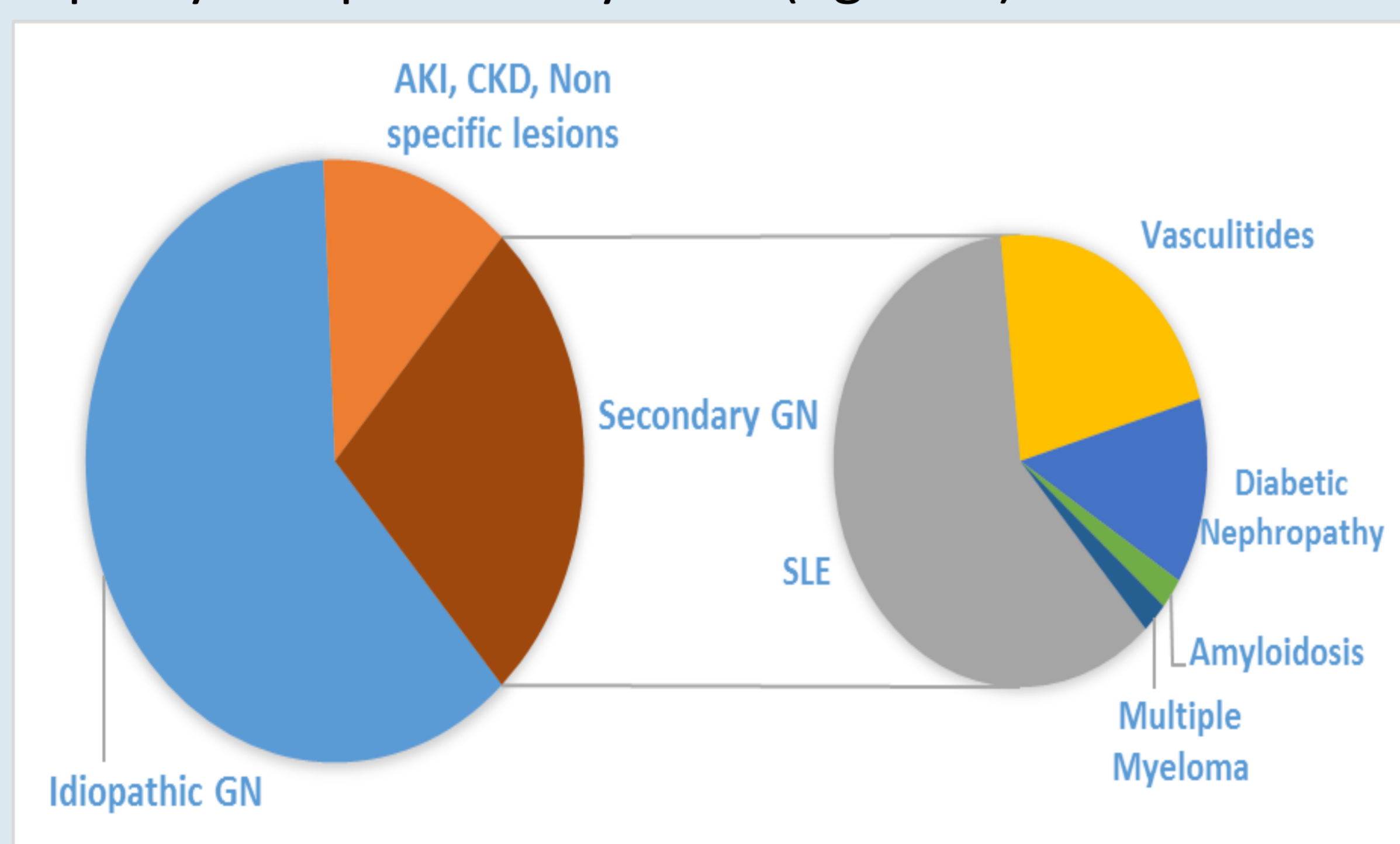


Figure 3. Secondary glomerular diseases.

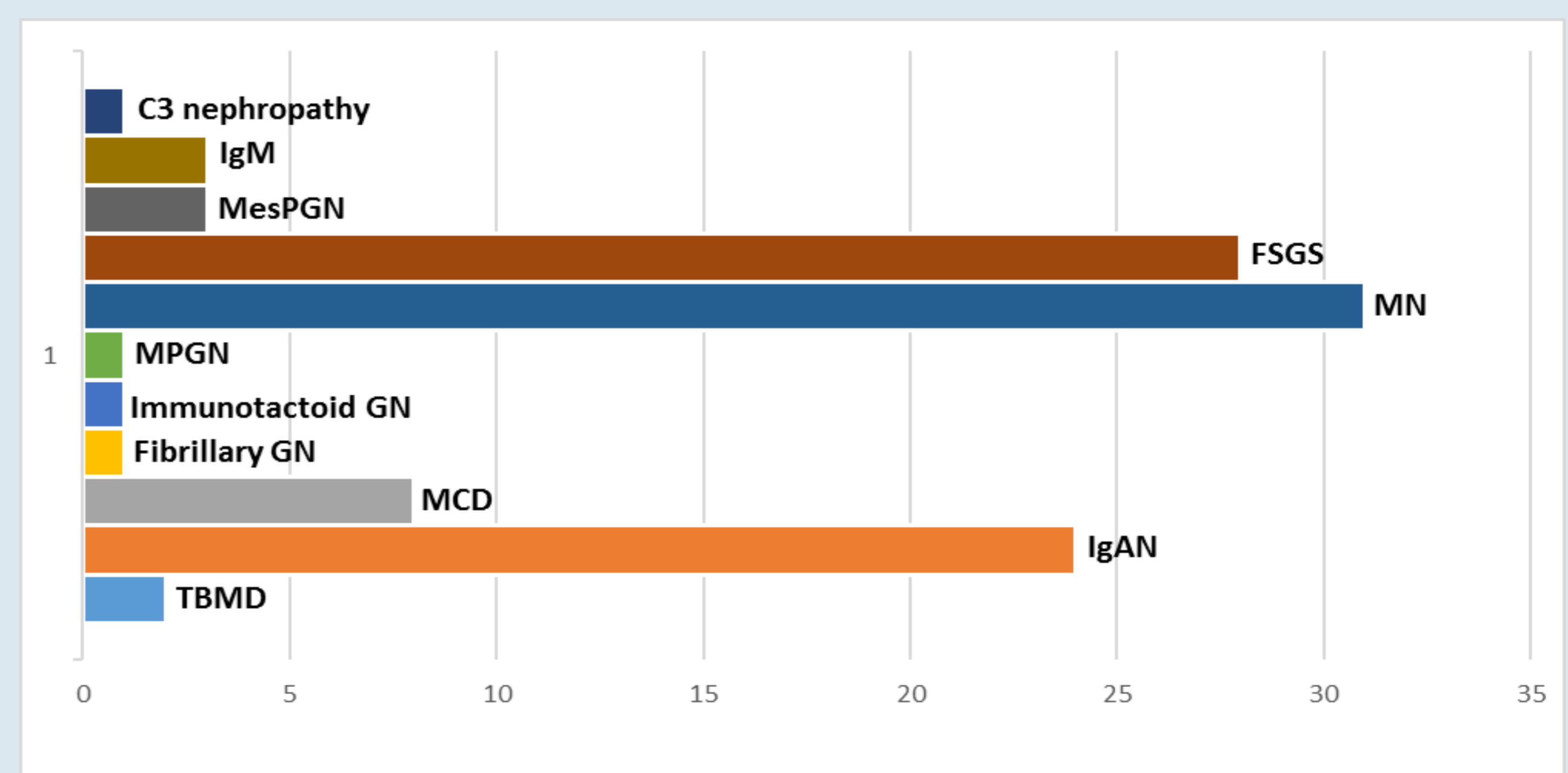


Figure 4. Idiopathic glomerular diseases.

Immunosuppressive therapy was introduced in 51% (86/169) of patients based on the histologic diagnosis.

## Conclusion

Kidney biopsy is essential in order to confirm a renal diagnosis and to make therapeutic plans. The percutaneous, ultrasound-guided technique can be safely applied even to obese patients. This is particularly important when considering the rising prevalence of obesity in our patient population.