Spanish Registry of Glomerulonephritis
Data from 16,000 renal biopsies

First International Renal Pathology Conference
Venue: University A Coruña, A Coruña Spain
June 9-12, 2010

A Joint meeting of the Renal Pathology Society, European Society of Pathology – Working Group, and the Spanish Pathology Society


Spanish Society of Nephrology
Introduction

• The knowledge of the epidemiology of biopsied renal diseases provides useful information about pathology and clinico-pathologic correlations

• The Spanish Registry of Glomerulonephritis has investigated the epidemiology of biopsied renal diseases since 1994
Spanish Registry of Glomerulonephritis.

Aims

• To study the epidemiology of native renal diseases in Spain

• To know the prevalence and incidence of biopsied renal diseases

• To study the relationship between clinical data and histologic patterns
Worldwide distribution of glomerular diseases: the role of renal biopsy registries

Francesco Pesce and Francesco Paolo Schena

<table>
<thead>
<tr>
<th>Country</th>
<th>Reference</th>
<th>Primary GN (%)</th>
<th>Secondary GN (%)</th>
</tr>
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<tbody>
<tr>
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<td>3</td>
<td>IgAN (22)a</td>
<td>LN (13)a</td>
</tr>
<tr>
<td>Brazil</td>
<td>1</td>
<td>FSGS (25)b</td>
<td>LN (42)b</td>
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<tr>
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<td>LN (26)b</td>
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<td>IgAN (17)a</td>
<td>LN (11)a</td>
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<tr>
<td>Hungary</td>
<td>8</td>
<td>IgAN (34)b</td>
<td>LN (23)b</td>
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<tr>
<td>Macedonia</td>
<td>10</td>
<td>IgAN (15)a</td>
<td>LN (7)a</td>
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<tr>
<td>Romania</td>
<td>11</td>
<td>MN (13)b</td>
<td>LN (29)b</td>
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<tr>
<td>Serbia</td>
<td>12</td>
<td>MPGN (29)b</td>
<td>LN (76)b</td>
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<td>UK</td>
<td>13</td>
<td>Non-IgA mesangiolproliferative (25)b</td>
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<td>21</td>
<td>IgAN (39)b</td>
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<tr>
<td>Asia China</td>
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<td>LN (54)b</td>
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<td>Korea</td>
<td>16</td>
<td>IgAN (28)b</td>
<td>LN (9)b</td>
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<td>Australia</td>
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</table>

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REGISTRO DE GLOMERULONEFIRITIS
Sociedad Española de Nefrología

AÑO   HOSPITAL   POBLACIÓN

INICIALES

EDAD   años   FECHA NACIMIENTO   /   /   SEXO: masculino   femenino

HTA: si/no   Creatinina: mg/dl   CCr: ml/min/1.73m²

Proteinuria g/día/1.73 m²   Sedimento: 1) macrohematuria 2) microhematuria 3) leucocituria 4) cilindruria 5) telescopado 6) normal

Tiempo de evolución: meses

Síndrome clínico principal:
1) Sínd. Nefrótico 5) Insuficiencia renal aguda
2) Sínd. Nefrótico agudo 6) Insuficiencia renal crónica
3) Alt. Urinarias persistentes 7) Hematuria macroscópica aislada
4) Hipertensión arterial 8) Hematuria recidivante

N° de biopsia: 1° 2° 3°  
Método de estudio:
1) solo microscopio óptico 2) solo inmunofluorescencia 3) MO + IF 4) MO + IF + electrónico

N° de glomérulos:

DIAGNÓSTICO HISTOLÓGICO:
1) Mínimos cambios 8) Mesang. no-lgA 18) NAE benigna
2) GN Segmentaria Focal 9) GN fibrilar 19) NAE maligna
3) GN Proliferativo endocapilar 10) N. lúpica 20) MA Trombótica
4) GN extracapilar 11) Colagenosis 21) Enf. Ateroesclerótica
   a) tipo I 12) Vasculitis 22) Necrosis Tubular Aguda
   b) tipo II 13) Goodpasture 23) Riñón de Mieloma
   c) tipo III (vasculitis) 14) Cricoglobulinemia 24) Nefritis Interst. Aguda
   d) tipo III (vasculitis) 15) Amiloidosis 25) Nefritis Interst. Crónica
   e) tipo III (vasculitis) 16) Citologia de núcleos 26) Inclasificable
6) N Membranosa 17) N. diabetica 27) Esclerosis
7) Mesangial IgA 18) N. diabetica

http://www.senefro.org
Spanish Registry of Glomerulonephritis

• Period: 1994-2008 (15 years)

• Native renal biopsies (no allograft biopsies)

• Participating centres: 120

• Total number of renal biopsies: 16,444
Centre 31.6%
East 38.7%
North 9.3%
South 19.5%
Registry GN 1994-2008
Evolution in the number of renal biopsies

Total: 16,444


Number of biopsies: 1215, 1265, 1229, 1263, 1251, 808, 839, 1393, 1318, 936
Distribution according to age

- 15-65 years: 71%
- > 65 years: 24%
- < 15 years: 5%

n: 16,027
Annual evolution according to the group of ages

P<0.0001
### General data (1)

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Gender (M/F)</th>
<th>Arterial Hypertension (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;15 years</td>
<td>1.3</td>
<td>16.7</td>
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<tr>
<td>n: 830</td>
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<tr>
<td>15-65 years</td>
<td>1.5</td>
<td>50.2</td>
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<tr>
<td>n: 11.374</td>
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<tr>
<td>&gt;65 years</td>
<td>1.5</td>
<td>64.4</td>
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<tr>
<td>n: 3.809</td>
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<tr>
<td>Total number</td>
<td>1.5</td>
<td>51.8</td>
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<tr>
<td>n: 16.013</td>
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</table>
Proteinuria classification

- <1 g/24h: 15%
- 1-3 g/24h: 32%
- >3 g/24h: 53%

n: 14,658
Urinary sediment

- Microhaematuria: 57%
- Normal: 19.2%
- Miscellaneous: 9.3%
- Macroscopic haematuria: 7.8%
- Casts: 3.8%
- Leucocyturia: 3%

n: 14,362
Serum creatinine distribution

- < 1.5 mg/dL: 48%
- 1.5-3 mg/dL: 25%
- > 3 mg/dL: 27%

n: 15.633
# General Data (2)

<table>
<thead>
<tr>
<th>Age (median)</th>
<th>Serum Creatinine (median)</th>
<th>C$_{cr}$ (median)</th>
<th>Proteinuria (median)</th>
<th>Number of glomeruli (median)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;15 years n: 831</td>
<td>9</td>
<td>0.6</td>
<td>114</td>
<td>2.3</td>
</tr>
<tr>
<td>15-65 years n: 11.384</td>
<td>42</td>
<td>1.4</td>
<td>69</td>
<td>3</td>
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<tr>
<td>&gt;65 years n: 3.812</td>
<td>72</td>
<td>2.8</td>
<td>25</td>
<td>3</td>
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<tr>
<td>Total n: 16.027</td>
<td>47</td>
<td>1.5</td>
<td>60</td>
<td>3</td>
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</tbody>
</table>
Renal syndromes

- Nephrotic: 36.9%
- Asym. Urin. Abno.: 22.2%
- Acute Kidney Failure: 17.7%
- Chronic Renal Failure: 12.4%
- Nephritic: 5.6%
- Macrohaematuria: 3.2%
- Arterial Hypertension: 2%

n: 15,707
Distribution of syndromes according to age

- Nephrotic
- Nephritic
- Acute Kidney Failure
- Chronic Renal Failure
- Macrohaematuria

P<0.0001
### General Data (3)

<table>
<thead>
<tr>
<th></th>
<th>Nephrotic</th>
<th>Nephritic</th>
<th>Asymp. Urin. Abno.</th>
<th>Acute Kidney Failure</th>
<th>Chronic Renal Failure</th>
<th>Macrohae maturia</th>
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</thead>
<tbody>
<tr>
<td>&lt; 15 years</td>
<td>47.4</td>
<td>6.5</td>
<td>23.5</td>
<td>5.7</td>
<td>3.5</td>
<td>13.1</td>
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<tr>
<td>15-65 years</td>
<td>36.4</td>
<td>5.4</td>
<td>26.6</td>
<td>12.9</td>
<td>12.7</td>
<td>3.4</td>
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<tr>
<td>&gt; 65 years</td>
<td>35.6</td>
<td>5.9</td>
<td>8.8</td>
<td>34.8</td>
<td>13.5</td>
<td>0.6</td>
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<tr>
<td>Total</td>
<td>36.8</td>
<td>5.6</td>
<td>22.2</td>
<td>17.7</td>
<td>12.4</td>
<td>3.3</td>
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<td>N: 15.562</td>
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</tr>
</tbody>
</table>
Histological technique

- OM + IF: 76%
- OM + IF + EM: 17.7%
- OM only: 5.8%
- IF only: 0.7%

n: 15,480
### Overall Prevalence of Biopsied Renal Diseases

<table>
<thead>
<tr>
<th>Renal Disease</th>
<th>Prevalence (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Membranoproliferative GN</td>
<td>4</td>
</tr>
<tr>
<td>Unclassified</td>
<td>4.1</td>
</tr>
<tr>
<td>Nephroangiosclerosis</td>
<td>5</td>
</tr>
<tr>
<td>Vasculitis+ Crescent GN type 3</td>
<td>6.8</td>
</tr>
<tr>
<td>Minimal change disease</td>
<td>7.2</td>
</tr>
<tr>
<td>Focal Segmental Glom</td>
<td>9</td>
</tr>
<tr>
<td>Lupus Nephritis</td>
<td>9.5</td>
</tr>
<tr>
<td>Membranous Nephropathy</td>
<td>10.7</td>
</tr>
<tr>
<td>IgA Nephropathy</td>
<td>14.4</td>
</tr>
</tbody>
</table>

**n: 16,444**
OVERALL INCIDENCE OF BIOPSIED RENAL DISEASES

- IgA Nephropathy: 7.9
- Focal Segmental Glomerulosclerosis: 6.4
- Membranous Nephropathy: 6.2
- Lupus Nephritis: 5.6
- Minimal change disease: 4.8
- Nephroangiosclerosis: 4.6
- Vasculitis/Crescentic GN type 3: 4.3
- Membranoproliferative GN: 3.6
- Amyloidosis: 3.3
PREVALENCE OF BIOPSIED RENAL DISEASES < 15 YEAR-OLD PATIENTS

- Membranoproliferative GN: 2.8%
- Membranous Nephropathy: 2.9%
- Vasculitis+Cres GN type 3: 3.6%
- Lupus Nephritis: 6.4%
- Non IgA mesangial GN: 11.3%
- Focal Segmental Glom: 13%
- IgA Nephropathy: 20%
- Minimal change: 23.2%

n: 831
Evolution of percentages in main diseases < 15 year-old patients
PREVALENCE OF BIOPSIED RENAL DISEASES
15-65 YEAR-OLD PATIENTS

- Vasculitis+Cres GN type 3: 4.1%
- Nephroangiosclerosis: 5.3%
- Minimal change disease: 6.9%
- Focal Segmental Glom: 9.9%
- Membranous Nephropathy: 10.7%
- Lupus Nephritis: 12.4%
- IgA Nephropathy: 16.6%

n: 11,384
Evolution of percentages in main diseases
15-65 year-old patients
PREVALENCE OF BIOPSIED RENAL DISEASES
> 65 YEAR-OLD PATIENTS

- Diabetic Nephropathy: 5.2%
- Focal Segmental Glomerulosclerosis: 5.2%
- Vasculitis+Cres GN type 1+2: 5.4%
- Nephroangiosclerosis: 5.4%
- IgA Nephropathy: 5.7%
- Amyloidosis: 7.6%
- Membranous: 12.5%
- Vasculitis+Cres GN type 3: 15.5%

n: 3.812
Evolution of percentages in main diseases
> 65 year-old patients

\[ p \text{ ns} \]
Conclusions (1)

- The Spanish Registry of Glomerulonephritis maintains useful information about biopsied renal diseases in our country for more than 15 years.
- It is one of the largest and most recognized national based registry all over the world.
- It has recorded around 1,000 renal biopsies per year.
Conclusions (2)

- Males predominate in each group of ages
- There is only a 5% of participation in paediatric population
- The prevalence of hypertension, proteinuria, haematuria and renal failure is high in every group of ages
Conclusions (3)

- The main clinical indication of renal biopsy is nephrotic syndrome in paediatric and adult disease, whereas in elderly people predominate acute renal failure.
- Only 16% of renal tissue is completely studied by OM+IF+EM.
- Although IgA nephropathy is the most frequent finding, the distribution of renal diseases changes according to age.
Conclusions (4)

- **< 15 years:**
  - It predominates the variants of idiopathic nephrotic syndrome and IgA nephropathy

- **15-65 years:**
  - The main renal diseases are: IgA nephropathy, lupus nephritis, membranous nephropathy and focal segmental glomerulosclerosis

- **> 65 years:**
  - Renal limited vasculitis and crescentic type 3 glomerulonephritis followed by membranous nephropathy are the main renal diseases

It seems not to be any differences in the prevalences of main renal diseases in the last 15 years
Spanish Registry of Glomerulonephritis
Main challenges

• To increase participation, especially in paediatric population
• To accurately determine the incidence of renal diseases expressed as p.m.p.
• To handle the electronic web database and the new way to introducing the data
• To study in more detail clinical and histological findings complemented with follow-up evolution, which are not asked nowadays
• To maintain publications in high-impact journals
Original Article

Frequency of renal pathology in Spain 1994–1999

Francisco Rivera¹, Juan Manuel López-Gómez² and Rafael Pérez-García² representing the Spanish Registry of Glomerulonephritis

Clinicopathologic correlations of renal pathology in Spain

Francisco Rivera, Juan Manuel López-Gómez, Rafael Pérez-García, on behalf of the Spanish Registry of Glomerulonephritis¹

Sección de Nefrología, Complejo Hospitalario, Ciudad Real, Spain; and Servicio de Nefrología, Hospital General Universitario Gregorio Marañón, Madrid, Spain


Renal Biopsy Findings in Acute Renal Failure in the Cohort of Patients in the Spanish Registry of Glomerulonephritis

Juan M. López-Gómez* and Francisco Rivera,¹ on behalf of Spanish Registry of Glomerulonephritis
Papel del Registro de Glomerulonefritis de la Sociedad Española de Nefrología: pasado, presente y futuro

F. Rivera*, J. M. López-Gómez** y R. Pérez-García**

ANALISIS DE LOS FACTORES DE RIESGO DE DISFUNCIÓN RENAL EN LA NEFROPATIA LUPICA: REGISTRO ESPAÑOL MULTICÉNTRICO.

F Rivera, JM López-Gómez
On behalf of Spanish Registry of Glomerulonephritis
http://www.senefro.org/modules.php
Final reflections

• Althogh it is important to begin new investigations, it is even more difficult to working on them

• We certainly hope that this Registry will nor dissapear neither decrease its activity in the future
Thanks for your attention