

CHAPTER 2

Primary Glomerulonephritis

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2.1 Introduction

This chapter covers the main primary glomerulonephritis that were reported to the MRRB from the years 2005-2008.

Minimal change disease is the commonest secondary glomerulonephritis in adult contributing 33% of all primary glomerulonephritis in Malaysia. This was followed by focal segmental glomerulosclerosis which contributed about 30% of cases. Ig A nephropathy (19%) is the third commonest primary glomerulonephritis. Idiopathic membranous nephropathy contributed only 11% of all biopsy proven primary glomerulonephritis. The other types of primary glomerulonephritis are relatively uncommon (Table 2.1).

Table 2.1: Primary Glomerulonephritis, 2005-2008

Histopathological Diagnosis	2005		2006		2007		2008		Total	
	n	%	n	%	n	%	n	%	n	%
Minimal Change Disease (MCD)	76	35	86	29	84	31	143	37	389	33
Focal Segmental Glomerulosclerosis (FSGS)	61	28	106	36	87	32	101	26	355	30
Ig A nephropathy (Ig AN)	31	14	51	17	52	19	89	23	223	19
Membranous nephropathy (IMN)	23	10	33	11	33	12	36	9	125	11
Membrano-proliferative GN (MPGN)	10	5	9	3	4	1	4	1	27	2
Mesangial Proliferative GN non Ig A	13	6	8	3	9	3	6	2	36	3
Crescentic ANCA	0	0	1	0	0	0	4	1	5	0
Idiopathic Crescentic	6	3		0	4	1	2	1	12	1
Unknown	0	0	0	0	2	1	6	2	8	1
Total	220	100	294	100	275	100	391	100	1180	100

2.2: Minimal change disease

2.2.1: Introduction

Minimal change disease (MCD) is typically characterized by normal appearing glomeruli by light microscopy and the absence of complement or immunoglobulin deposits by immunofluorescence microscopy. Glomerular size is usually normal by standard methods of light microscopy, although enlarged glomeruli may be observed.

The characteristic histologic lesion in minimal change disease is diffuse effacement (also called "fusion") of the epithelial foot processes on electron microscopy. Minimal change disease is a major cause of nephrotic syndrome in both children and adults.

2.2.2: Patient population and characteristics

A total of 389 cases of minimal change disease were reported in 2005-2008. The mean age of the patients at the time of biopsy was 29.1 ± 12.8 with a clear predominance in second and third decades of life. The frequencies of age groups 15 to <25, and 25 to <35 were 51% and 23% respectively, which is 74% when combined. However, it is important to bear in mind that children with steroid responsive nephrotic syndrome are usually not biopsied, hence the actual incidence of minimal change disease in the paediatric age group is under-represented. The diagnosis of minimal change disease is relatively rare after 55 years of age and our reported frequency was only about 6% in this age group.

There is a higher incidence of minimal change disease in males, with a ratio of 2:1 in the four-year registry data (overall 66% as compared to 34% in the female group (Table 2.2.2 (a))).

In terms of racial distribution, there was no predilection of any particular ethnic group. The racial group distribution in Malay, Chinese and Indian was 60%, 17% and 6% (Table 2.2.2 (a)). This pattern of distribution reflects the ethnic composition of patients admitted to public hospitals.

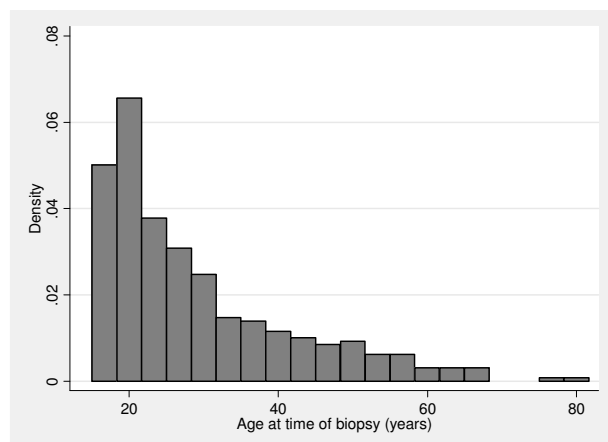
Table 2.2.2(a): Demographic characteristics for MCD, 2005-2008

Demographic Characteristics		n =389	%
Age (years)		29.1 ± 12.8	
Race	Male	258	66
	Female	131	34
Gender	Malay	234	60
	Chinese	66	17
	Indian	22	6
	Others	67	17

Table 2.2.2 (b): Age group at time of biopsy (years) for MCD, 2005-2008

Age group (years)	2005		2006		2007		2008		Total	
	n	%	n	%	n	%	n	%	n	%
15-<25	32	42	49	57	41	49	77	54	199	51
25-<35	21	28	20	23	16	19	34	24	91	23
35-<45	11	14	10	12	14	17	11	8	46	12
45-<55	10	13	4	5	6	7	11	8	31	8
55-<65	1	1	2	2	5	6	8	6	16	4
≥65	1	1	1	1	2	2	2	1	6	2
Total	76	100	86	100	84	100	143	100	389	100

Figure 2.2.2 (b): Age at time of biopsy (years) MCD, 2005-2008



2.2.3: Clinical presentation

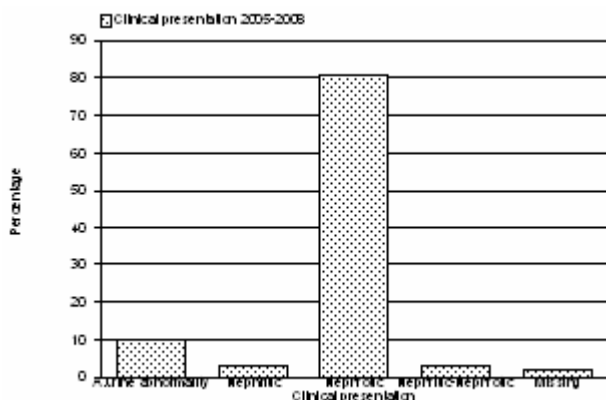
The mean level of 24 hours urine protein was 6.4 ± 5.1 g/day. Nephrotic syndrome, as expected, was the most common presentation (81%). Other presentations were asymptomatic urine abnormality (10%), nephritic syndrome (3%) and nephritic-nephrotic syndrome (3%) (Table & Figure 2.2.3(a)).

Majority of blood pressures were normal during presentation (88%) (Table 2.2.3(b)).

Most patients do not have any documented renal impairment, 58% have $eGFR \geq 90$ ml/min/1.73m² while 23% have $eGFR$ between 60 to 89 ml/min/1.73m². One fifth of patients have significant renal impairment ($eGFR$ less than 60 ml/min/1.73m²) (Table 2.2.3 (c)).

Table 2.2.3 (a): Clinical presentation for MCD, 2005-2008

Clinical Presentations	2005		2006		2007		2008		Total	
	n	%	n	%	n	%	n	%	n	%
Asymptomatic urine abnormality	4	5	9	10	11	13	16	11	40	10
Nephritic syndrome	2	3	3	3	3	4	5	3	13	3
Nephrotic syndrome	69	91	70	81	63	75	115	80	317	81
Nephritic-Nephrotic syndrome	1	1	2	2	3	4	6	4	12	3
Missing	0	0	2	2	4	5	1	1	7	2
Total	76	100	86	100	84	100	143	100	389	100

Figure 2.2.3 (a): Clinical presentation for MCD, 2005-2008**Table 2.2.3 (b):** Presence of hypertension in MCD, 2005-2008

Hypertension	n	%
Present	35	9
Absent	341	88
Missing	13	3
Total	389	100

Table 2.2.3 (c): Renal function in MCD by year, 2005-2008

GFR (ml/min/1.73m ²)	2005		2006		2007		2008		Total	
	n	%	n	%	n	%	n	%	n	%
≥ 90	41	54	53	62	42	50	88	62	224	58
60-89	20	26	17	20	24	29	27	19	88	23
30-59	13	17	12	14	11	13	21	15	57	15
15-29	2	3	1	1	5	6	5	3	13	3
<15	0	0	3	3	2	2	2	1	7	2
Total	76	100	86	100	84	100	143	100	389	100

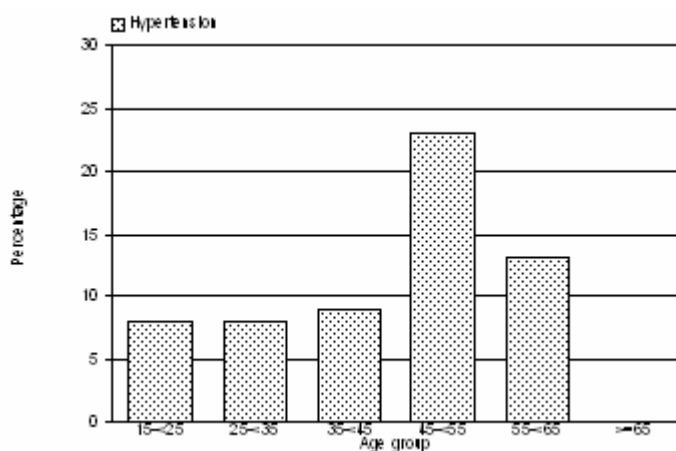
2.2.3.1: Clinical presentation by age

Nephrotic syndrome consistently predominates as the clinical presentation throughout all age groups (Table 2.2.3.1). However, the presence of hypertension increases with increasing age (Figure 2.2.3.1(b)).

Table 2.2.3.1: Clinical presentation by age group for MCD, 2005-2008

Clinical Presentations	15- <25		25-<35		35-<45		45-<55		55-<65		≥ 65		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Asymptomatic urine abnormality	18	9	10	11	7	16	3	10	2	13	0	0	40	11
Nephritic syndrome	5	3	5	6	1	2	1	3	0	0	1	17	13	3
Nephrotic syndrome	164	82	75	82	35	76	27	87	12	74	4	66	317	81
Nephritic-Nephrotic syndrome	10	5	0	0	1	2	0	0	0	0	1	17	12	3
Missing	2	1	1	1	2	4	0	0	2	13	0	0	7	2
Total	199	100	91	100	46	100	31	100	16	100	6	100	389	100

Figure 2.2.3.1 (b): Hypertension by age group for MCD, 2005-2008



2.2.3.2: Clinical presentation by gender

There are basically no differences between genders in terms of clinical presentation and renal function at presentation (Table 2.2.3.2 (a & b)). Both genders have relatively well preserved with renal function with less than 20% have eGFR < 60 ml/min/1.72 m² (Figure 2.2.3.2 (b)). The prevalence of hypertension was higher in female than male (13% vs. 7%) (Figure 2.2.3.2(c)).

Table 2.2.3.2 (a): Clinical presentation by gender for MCD, 2005-2008

Clinical Presentations	Male		Female	
	n	%	n	%
Asymptomatic urine abnormality	20	8	20	15
Nephritic syndrome	7	3	6	5
Nephrotic syndrome	215	82	102	78
Nephritic-Nephrotic syndrome	12	5	0	0
Missing	4	2	3	2
Total	258	100	131	100

Table 2.2.3.2 (b): Renal function by gender for MCD, 2005-2008

eGFR (ml/min/1.73m ²)	Male		Female	
	n	%	n	%
≥90	152	59	72	55
60-89	54	21	34	26
30-59	37	14	20	15
15-29	9	3	4	3
<15	6	2	1	1
Total	258	100	131	100

Figure 2.2.3.2 (b): Impaired renal function by gender for MCD, 2005-2008

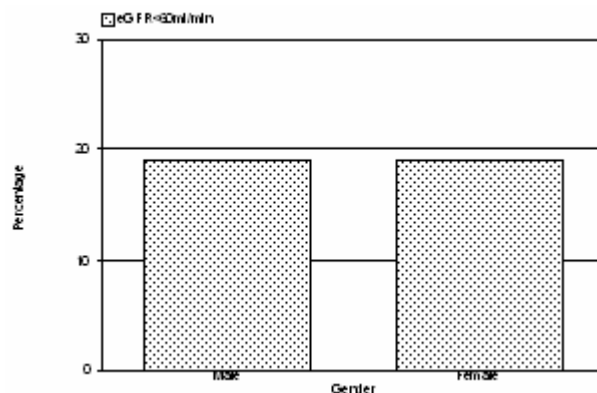
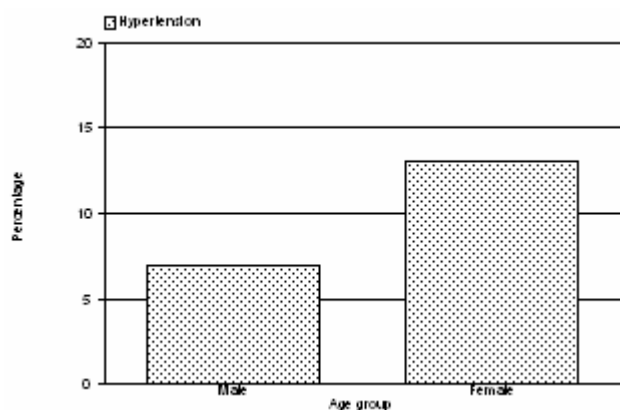


Figure 2.2.3.2 (c): Hypertension by gender for MCD, 2005-2008



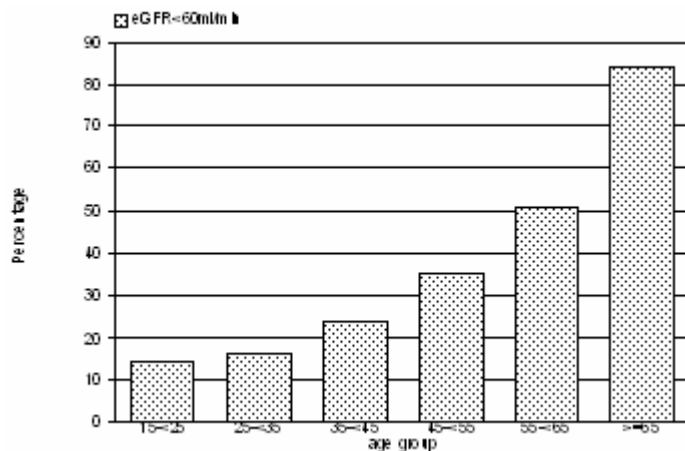
2.2.4: Renal function at presentation

About three-quarter of patients below 35-years-old have well-preserved renal function (eGFR ≥ 60 ml/min/1.73m²). This is in contrast to the older age group, e.g. those aged above 55 years where 50-84 % have already suffered significant renal impairment (eGFR < 60 ml/min/1.73m²) on presentation (Table & Figure 2.2.4).

Table 2.2.4: Renal function at presentation by age group for MCD, 2005-2008

eGFR (ml/min/1.73m ²)	15 ≤ 25		25 ≤ 35		35 ≤ 45		45 ≤ 55		55 ≤ 65		≥ 65		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
≥90	137	69	58	64	15	33	10	32	4	25	0	0	224	58
60-89	35	18	18	20	20	43	10	32	4	25	1	17	88	23
30-59	22	11	11	12	7	15	10	32	3	19	4	67	57	15
15-29	5	3	3	3	1	2	1	3	3	19	0	0	13	3
<15	0	0	1	1	3	7	0	0	2	13	1	17	7	2
Total	199	100	91	100	46	100	31	100	16	100	6	100	389	100

Figure 2.2.4: Renal function at presentation by age group for MCD, 2005-2008



2.3: Focal Segmental Glomerulosclerosis

2.3.1: Introduction

Focal segmental glomerulosclerosis is defined on histologic criteria by segmental capillary obliteration with increased mesangial matrix deposition, intra-capillary hyaline deposits and focal adhesions of the capillary tuft to Bowman's capsule.

2.3.2: Patient Population and Characteristics

A total of 355 cases of FSGS were reported in our four-year registry data. The mean age at the time of biopsy was 32.5 ± 13.5 (Table 2.3.2 (a)). The first three decades of life were the predominant age groups in this type of renal disease. After the age of 55, the frequency rate was only 8% compared to other age groups (Table & Figure 2.3.2 (b)). FSGS was slightly more common in males (57%) compared to females (43%) (Table 2.3.2(a)). The distribution according to ethnicity was 62% in Malays, 16% in Chinese, 7% in Indians and 15% in others (Table 2.3.2(a)).

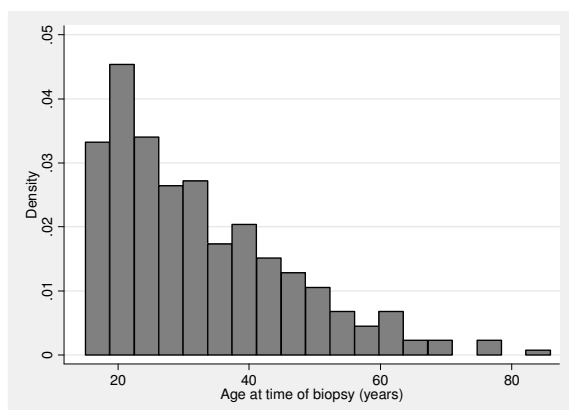
Table 2.3.2 (a): Demographic characteristics for FSGS, 2005-2008

Demographic Characteristics		n=355	%
Age (years)		32.5 ± 13.5	
Gender	Male	203	57
	Female	152	43
Race	Malay	221	62
	Chinese	56	16
	Indian	26	7
	Others	52	15

Table 2.3.2 (b): Age group at time of biopsy (years) for FSGS, 2005-2008

Age group (years)	2005		2006		2007		2008		Total	
	n	%	n	%	n	%	n	%	n	%
15-<25	19	31	46	43	31	36	35	35	131	37
25-<35	17	28	23	22	28	32	31	31	99	28
35-<45	13	21	18	17	15	17	14	14	60	17
45-<55	8	13	9	8	9	10	13	13	39	11
55-<65	3	5	5	5	3	3	6	6	17	5
≥65	1	2	5	5	1	1	2	2	9	3
Total	61	100	106	100	87	100	101	100	355	100

Figure 2.3.2 (b): Age at time of biopsy (years) for FSGS, 2005-2008



2.3.3: Clinical Presentation

The mean level of 24 hours urine protein was 4.6 ± 3.7 g/day. Nephrotic syndrome was the most common reported clinical presentation (65%). Other reported presentations were asymptomatic urine abnormality (21%), nephritic syndrome (6%) and nephritic-nephrotic syndrome (3%) (Table & Figure 2.3.3(a)).

The majority of patients (79%) have normal blood pressure during the initial presentation (Table 2.3.3 (b)).

Table 2.3.3 (a): Clinical presentation for FSGS, 2005-2008

Clinical Presentations	2005		2006		2007		2008		Total	
	n	%	n	%	n	%	n	%	n	%
Asymptomatic urine abnormality	10	16	19	18	17	20	28	28	74	21
Nephritic syndrome	4	7	5	5	5	6	6	6	20	6
Nephrotic syndrome	43	70	76	72	56	64	57	56	232	65
Nephritic-Nephrotic syndrome	1	2	0	0	6	7	4	4	11	3
Missing	3	5	6	6	3	3	6	6	18	5
Total	61	100	106	100	87	100	101	100	355	100

Figure 2.3.3 (a): Clinical presentation for FSGS, 2005-2008

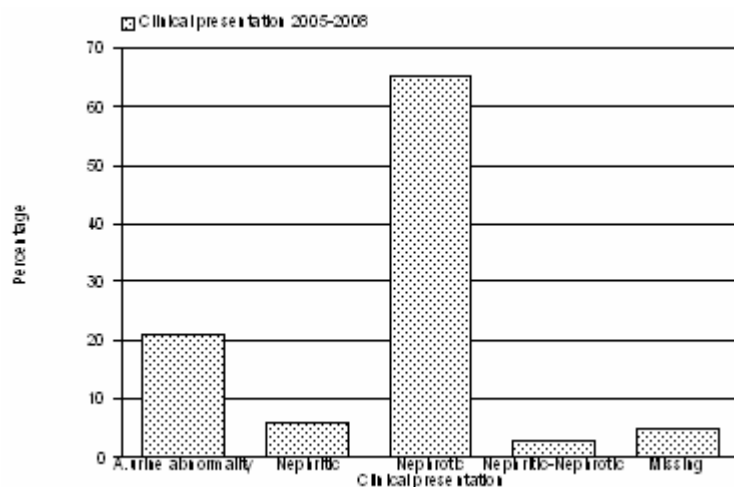


Table 2.3.3 (b): Hypertension in FSGS, 2005-2008

Hypertension	n	%
Present	63	18
Absent	281	79
Missing	11	3
Total	355	100

2.3.3.1: Clinical presentation by age

Nephrotic syndrome consistently predominates as the clinical presentation throughout all age groups particularly in the very young (below 25 years) and those above 55 (Table & Figure 2.3.3.1(a)). years. The prevalence of hypertension increases with increasing age (Figure 2.3.3.1(b)).

Table 2.3.3.1 (a): Clinical presentation by age group for FSGS, 2005-2008

Age group (years)	15 ≤ 25		25 ≤ 35		35 ≤ 45		45 ≤ 55		55 ≤ 65		≥ 65		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Asymptomatic urine abnormality	18	14	33	34	16	27	5	13	2	12	0	0	74	21
Nephritic syndrome	6	5	9	9	3	5	1	3	1	6	0	0	20	6
Nephrotic syndrome	100	76	49	49	36	59	26	67	14	82	7	78	232	65
Nephritic-Nephrotic syndrome	4	3	3	3	1	2	3	8	0	0	0	0	11	3
Missing	3	2	5	5	4	7	4	9	0	0	2	22	18	5
Total	131	100	99	100	60	100	39	100	17	100	9	100	355	100

Figure 2.3.3.1 (a): Clinical presentation by age group for FSGS, 2005-2008

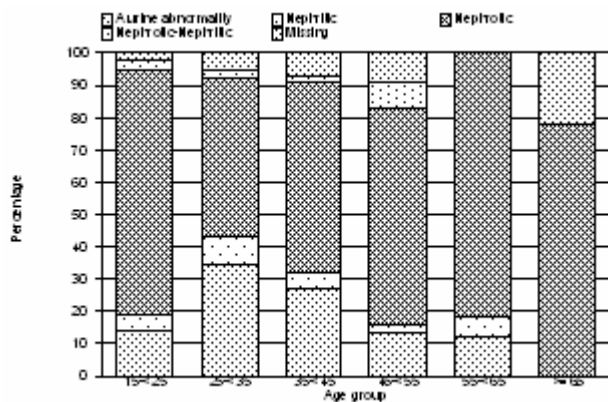
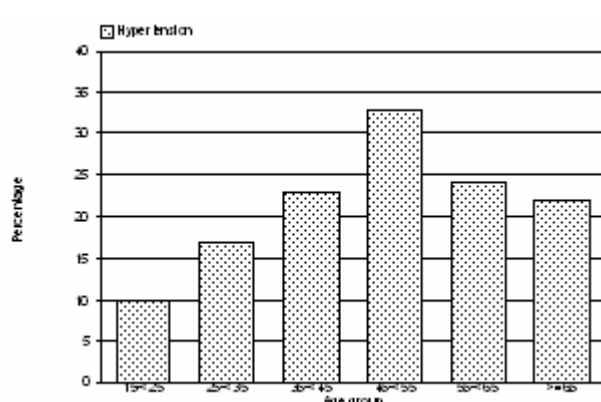


Figure 2.3.3.1 (b): Hypertension by age group for FSGS, 2005-2008



2.3.3.2: Clinical presentation by gender

From the 4 years of collected data, nephrotic syndrome appears more common in males and more females present as asymptomatic urine abnormality (Table & Figure 2.3.2 (a)). There was no difference in the prevalence of hypertension in both genders (Figure 2.3.3.2(b)).

Table 2.3.3.2 (a): Clinical presentation by gender for FSGS, 2005-2008

Clinical Presentations	Male		Female	
	n	%	n	%
Asymptomatic urine abnormality	30	16	44	29
Nephritic syndrome	11	5	9	6
Nephrotic syndrome	147	72	85	56
Nephritic-Nephrotic syndrome	8	4	3	2
Missing	7	3	11	7
Total	203	100	152	100

Figure 2.3.3.2 (a): Clinical presentation by gender for FSGS, 2005-2008

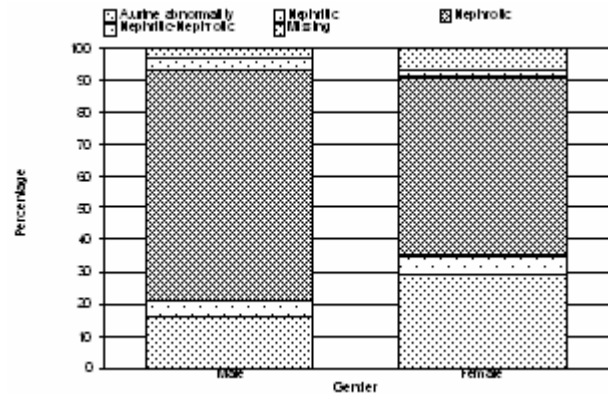
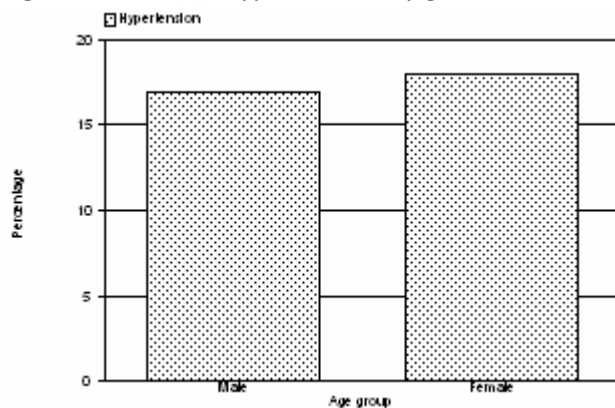


Figure 2.3.3.2 (b): Hypertension by gender in FSGS, 2005-2008



2.3.4: Renal function at presentation

About 59% have normal or well-preserved renal function (eGFR ≥ 60 ml/min/1.73m²) on presentation. There were 21% of cases with eGFR range of 30-59 ml/min/1.73m², 11 % were 15-29 ml/min/1.73m² and 5% were <15 ml/min/1.73m² (Table 2.3.4).

Table 2.3.4: Impaired renal function in FSGS by year, 2005-2008

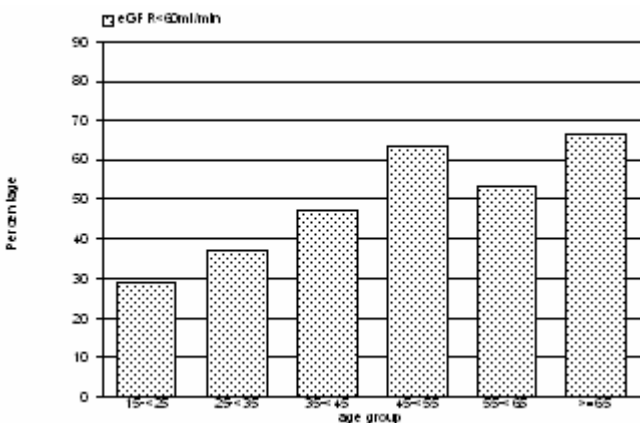
eGFR (ml/min/1.73m ²)	2005		2006		2007		2008		Total	
	n	%	n	%	n	%	n	%	n	%
≥ 90	23	38	45	42	31	36	36	36	135	38
60-89	7	11	27	25	25	29	17	17	76	21
30-59	19	31	17	16	21	24	31	31	88	25
15-29	8	13	14	13	8	9	10	10	40	11
<15	4	7	3	3	2	2	7	7	16	5
Total	61	100	106	100	87	100	101	100	355	100

2.3.4.1: Renal function at presentation by age

There was a higher risk of renal impairment with increasing age (Table & Figure 2.3.4.1)

Table 2.3.4.1: Renal function at presentation by age group for FSGS, 2005-2008

eGFR (ml/min/1.73m ²)	15-<25		25-<35		35-<45		45-<55		55-<65		≥ 65		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
≥ 90	72	55	40	40	17	28	4	10	2	12	0	0	135	38
60-89	20	15	22	22	15	25	10	26	6	35	3	33	76	21
30-59	32	24	21	21	16	27	13	33	5	29	1	11	88	25
15-29	4	3	14	14	10	17	6	15	3	18	3	33	40	11
<15	3	2	2	2	2	3	6	15	1	6	2	22	16	5
Total	131	100	99	100	60	100	39	100	17	100	9	100	355	100

Figure 2.3.4.1: Impaired renal function at presentation by age group for FSGS, 2005-2008

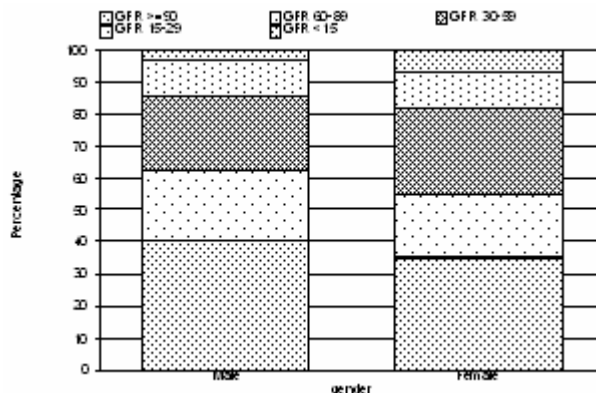
2.3.4.2: Renal function at presentation by gender

There were basically no differences between genders in terms of renal function.

Table 2.3.4.2: Renal function at presentation according to gender for FSGS, 2005-2008

eGFR (ml/min/1.73m ²)	Male		Female	
	n	%	n	%
≥90	82	40	53	35
60-89	46	23	30	20
30-59	46	23	42	27
15-29	23	11	17	11
<15	6	3	10	7
Total	203	100	152	100

Figure 2.3.4.2: Renal function at presentation according to gender for FSGS, 2005-2008



2.4: Idiopathic Membranous Nephropathy (IMN)

2.4.1. Introduction

Membranous nephropathy is characterised by subepithelial immune deposits with spikes and thickening of the basement membrane.

2.4.2. Patient population and characteristics

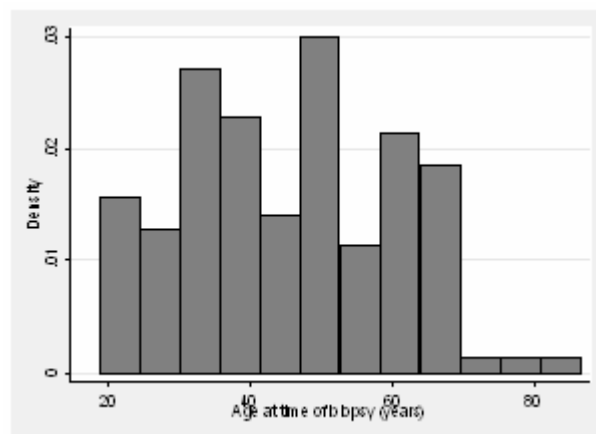
Over the four-year period from 2005-2008, 125 cases of Idiopathic membranous nephropathy (IMN) were reported to the registry. The mean age at biopsy was 45.3 ± 14.7 , with a range between 19 and 80.8 years (Table & Figure 2.4.2).

Overall, there were slightly more males than females. The racial distribution was 44% in Malays, 40% in Chinese, 6 % in Indians and 10% in others (Table 2.4.2).

Table 2.4.2: Demographic characteristics for IMN, 2005-2008

Demographic characteristics		n=125	%
Age (years)		45.3 + 14.7 years	
Gender	Male	71	57
	Female	54	43
Race	Malay	55	44
	Chinese	50	40
	Indian	8	6
	Other	12	10

Figure 2.4.2: Age at time of biopsy (years) for IMN, 2005-2008

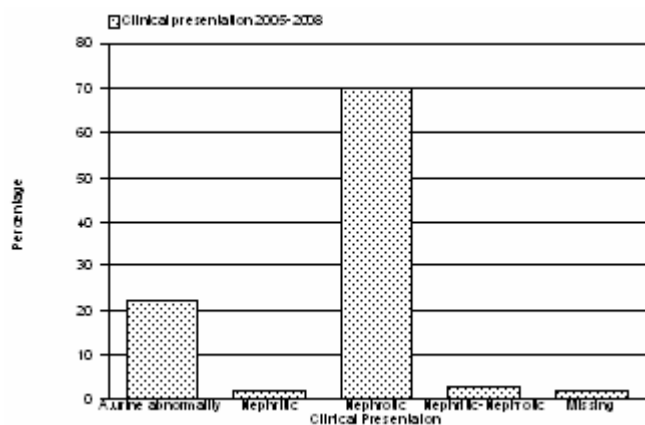


2.4.3: Clinical presentation

The majority of patients (70%) presented with overt nephrotic syndrome. The median level of proteinuria was 3.5 g/day with a range from 0.3- 19.8 g/day. Asymptomatic urinary abnormalities, nephritic-nephrotic syndrome, and nephritic syndrome were found in 22%, 3% and 2% respectively (Table & Figure 2.4.3(a)). Hypertension was found in 21% of cases (Table 2.4.3 9(c)) and 37% presented with eGFR< 60mls/min (Table 2.4.3(c)).

Table 2.4.3 (a): Clinical presentation for IMN, 2005-2008

Clinical Presentations	2005		2006		2007		2008		Total	
	n	%	n	%	n	%	n	%	n	%
Asymptomatic urine abnormality	1	4	8	24	9	27	10	28	28	22
Nephritic syndrome	1	4	1	3	0	0	1	3	3	2
Nephrotic syndrome	20	87	21	64	23	70	23	64	87	70
Nephritic-Nephrotic syndrome	1	4	1	3	0	0	2	6	4	3
Missing	0	0	2	6	1	3	0	0	3	2
Total	23	100	33	100	33	100	36	100	125	100

Figure 2.4.3 (a): Clinical presentation for IMN, 2005-2008**Table 2.4.3 (b):** Hypertension in IMN, 2005-2008

Hypertension	n	%
Present	26	21
Absent	97	78
Missing	2	2
Total	125	100

Table 2.4.3(c): Renal function in IMN, 2005-2008

eGFR (ml/min/1.73m ²)	n	%
≥90	43	34
60-89	35	28
30-59	33	26
15-29	10	8
<15	4	3
Total	125	100

2.4.3.1: Clinical presentation by age

Nephrotic syndrome remained the commonest clinical presentation across all age groups, and older patients were less likely to be biopsied for asymptomatic urinary abnormalities (Table & Figure 2.4.3.1 (a)). Comparison with respect to incidence of hypertension is limited by the relatively smaller numbers of patients at both extremes of age.

Table 2.4.3.1(a): Clinical presentation by age group for IMN, 2005-2008

Age group (years)	15 ≤ 25		25 ≤ 35		35 ≤ 45		45 ≤ 55		55 ≤ 65		≥ 65		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Asymptomatic urine abnormality	3	27	6	21	4	18	5	18	10	45	0	0	28	22
Nephritic syndrome	0	0	0	0	0	0	2	7	1	5	0	0	3	2
Nephrotic syndrome	7	64	21	75	17	74	19	68	10	45	13	100	87	70
Nephritic-Nephrotic syndrome	1	9	0	0	1	4	2	7	0	0	0	0	4	4
Missing	0	0	1	4	1	4	0	0	1	5	0	0	3	2
Total	11	100	28	100	23	100	28	100	22	100	13	100	125	100

Figure 2.4.3.1 (a): Clinical presentation by age group for IMN, 2005-2008

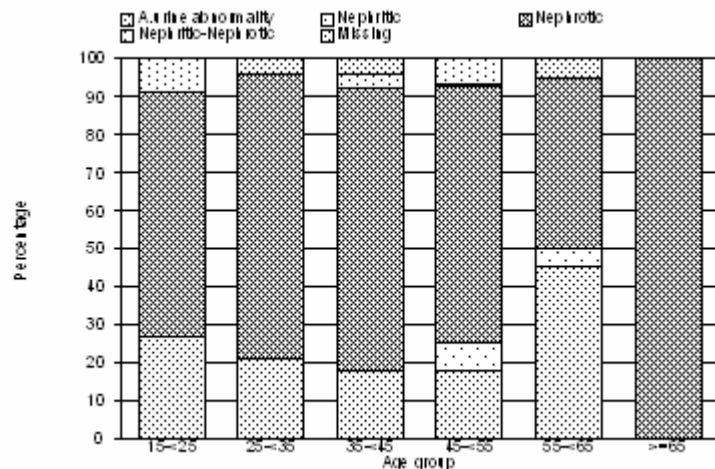


Table 2.4.3.1(b): Hypertension by age group for IMN, 2005-2008

Hypertension	15 ≤ 25		25 ≤ 35		35 ≤ 45		45 ≤ 55		55 ≤ 65		≥65		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Present	3	27	4	14	4	17	3	11	8	36	4	31	26	21
Absent	8	73	24	86	18	78	24	86	14	64	9	69	97	78
Missing	0	0	0	0	1	4	1	4	0	0	0	0	2	2
Total	11	100	28	100	23	100	28	100	22	100	13	100	125	100

2.4.3.2: Clinical presentation by gender

There were no significant differences in gender with respect to clinical presentation.

Figure 2.4.3.2 (a): Clinical presentation by gender for IMN, 2005-2008

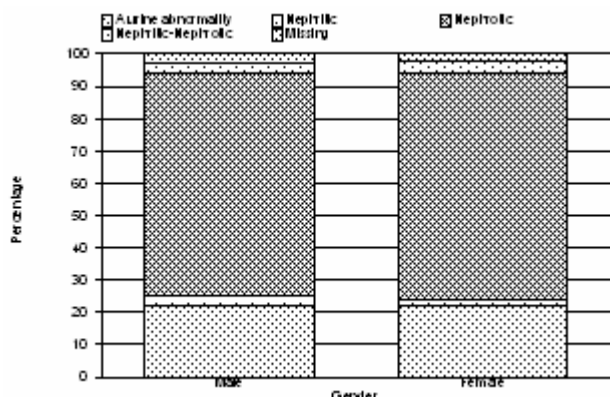


Table 2.4.3.2 (b): Hypertension by gender for IMN, 2005-2008

Hypertension	Male		Female	
	n	%	n	%
Present	16	23	10	19
Absent	54	76	43	80
Missing	1	1	1	2
Total	71	100	54	100

2.4.4: Renal function at presentation

2.4.4.1: Renal function at presentation by age

Majority of cases (62%) had eGFR > 60 ml/min/1.73m² at presentation. There were 27 % of cases with eGFR range of 30-59 ml/min/1.73m², 8% in the 15-29 ml/min/1.73m² and 3% in the < 15 ml/min/1.73m² (Table & Figure 2.4.4.1 (a)). The proportion of patients with eGFR < 60 ml/min/1.73m². Increase with age (Figure 2.4.4.1 (b)).

Table 2.4.4.1(a): Renal function at presentation by age group for IMN, 2005-2008

eGFR (ml/min/1.73m ²)	15 ≤ 25		25 ≤ 35		35 ≤ 45		45 ≤ 55		55 ≤ 65		≥ 65		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
≥90	10	91	13	46	9	39	7	25	3	14	1	8	43	34
60-89	0	0	8	28	8	35	11	39	7	32	1	8	35	28
30-59	1	9	5	18	4	18	7	25	8	36	8	61	33	27
15-29	0	0	1	4	1	4	3	11	2	9	3	23	10	8
<15	0	0	1	4	1	4	0	0	2	9	0	0	4	3
Total	11	100	28	100	23	100	28	100	22	100	13	100	125	100

Figure 2.4.4.1 (a): Renal function at presentation by age group for IMN, 2005-2008

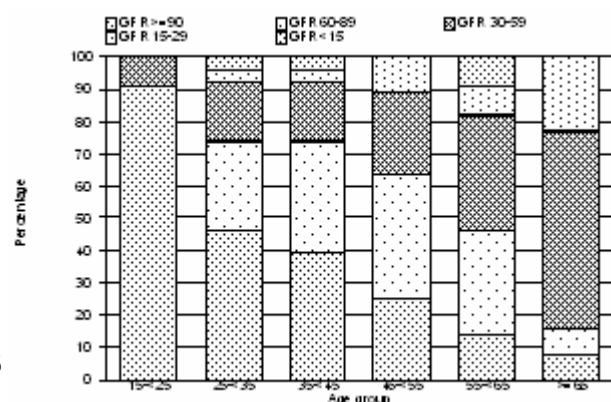
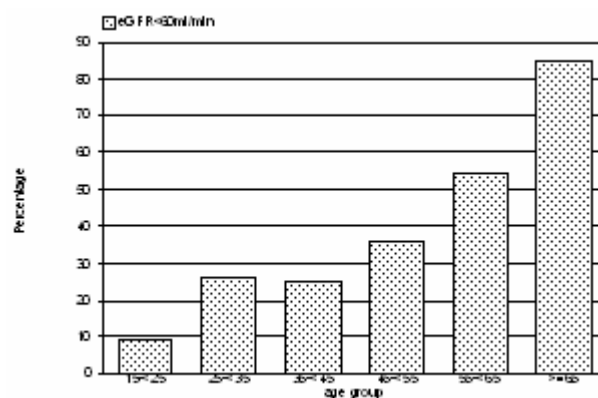


Figure 2.4.4.1 (b): Impaired renal function by age group for IMN, 2005-2008



2.4.4.2: Renal function at presentation by gender

Males appear to have worse renal function. Up to 44% of male vs. 31% of females has eGFR < 60 ml/min/1.73m² at presentation (Table 2.4.4.2).

Table 2.4.4.2: Renal function at presentation according to gender for IMN, 2005-2008

eGFR (ml/min/1.73m ²)	Male		Female	
	n	%	n	%
≥90	17	24	26	48
60-89	23	32	12	21
30-59	23	32	10	19
15-29	7	11	3	6
<15	1	1	3	6
Total	71	100	54	100

2.5: Ig A Nephropathy (IgAN)

2.5.1: Introduction

IgAN is defined by the predominant deposition of IgA in the glomerular mesangium although light microscopic appearances and clinical features can vary considerably due to the various patterns of histopathologic injury found in this glomerulonephritis.

2.5.2: Patient population and characteristics

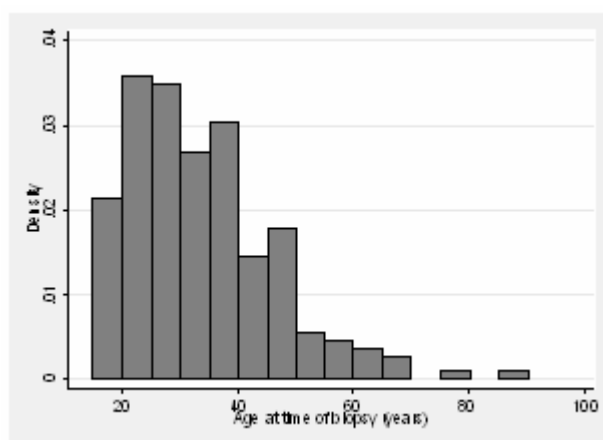
Two hundred and twenty-three cases of IgA nephropathy were reported to the registry over the 3-year period of data collection. The mean age at biopsy was 33.8 ± 12.5 years and majority of the cases (81%) were between ages 15 to 45 years (Table & Figure 2.5.2 (b)). As suggested in the previous report, there is slight female preponderance in our cohort (53% vs. 47%), which is contrary to what has been reported in the literature. The ethnic distribution was Malays (51%), followed by Chinese (28%) and Indians (8%) (Table 2.5.2(a)).

Table 2.5.2(a): Demographic characteristics of patients with IgA nephropathy, 2005-2008

Demographic Characteristics		n=223	%
Age (years)		33.8 ± 12.5	
Gender	Male	104	47
	Female	119	53
Race	Malay	114	51
	Chinese	62	28
	Indian	18	8
	Others	29	13

Table 2.5.2 (b): Age group at time of biopsy (years) for IgA nephropathy, 2005-2008

Age group (years)	2005		2006		2007		2008		Total	
	n	%	n	%	n	%	n	%	n	%
15-<25	5	16	15	29	15	29	29	33	64	29
25-<35	10	32	14	27	21	40	23	26	68	30
35-<45	10	32	11	22	8	15	21	24	50	22
45-<55	2	6	8	16	6	12	10	11	26	12
55-<65	3	10	2	4	2	4	3	3	10	4
≤65	1	3	1	2	0	0	3	3	5	2
Total	31	100	51	100	52	100	89	100	223	100

Figure 2.5.2 (b): Age at time of biopsy (years) for IgA nephropathy, 2005-2008

2.5.3: Clinical presentation

Asymptomatic urine abnormalities remains the most common presentation of IgAN (55%). Up to 25% of those who were biopsied had nephrotic syndrome (Table 2.5.3 (a)). This figure was much higher than the 5% quoted in the literature and this may reflect relatively conservative local practices with regards to investigation of asymptomatic urine abnormalities. However, it might not be reflective of the true picture due to the small patient numbers in this age group (5 patients). Up to 32% of patients were hypertensive at presentation (Table 2.5.3 (b)).

Table 2.5.3 (a): Clinical presentation for IgA nephropathy, 2005-2008

Clinical Presentations	2005		2006		2007		2008		Total	
	n	%	n	%	n	%	n	%	n	%
Asymptomatic urine abnormality	19	61	20	39	28	54	56	63	123	55
Nephritic syndrome	1	3	3	6	4	8	8	9	16	7
Nephrotic syndrome	8	26	16	31	10	19	21	24	55	25
Nephritic-Nephrotic syndrome	0	0	3	6	4	8	3	3	10	4
Missing	3	10	9	18	6	12	1	1	19	9
Total	31	100	51	100	52	100	89	100	223	100

Figure 2.5.3 (a): Clinical presentation for IgA nephropathy, 2005-2008

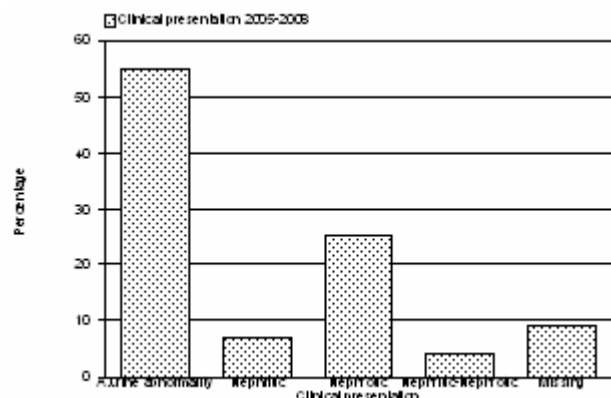


Table 2.5.3 (b): Hypertension in IgA nephropathy, 2005-2008

Hypertension	n	%
Present	71	32
Absent	142	64
Missing	10	4
Total	223	100

2.5.3.1: Clinical presentation by age

Asymptomatic urine abnormalities is the most common clinical presentation of IgAN in all age groups except in those above the age of 65 years old. This was followed by nephrotic syndrome.

Table 2.5.3.1: Clinical presentation by age group for IgA nephropathy, 2005-2008

Age group (years)	15- <25		25-<35		35-<45		45-<55		55-<65		≤65		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Asymptomatic urine abnormality	30	47	39	57	31	62	15	57	7	70	1	20	123	55
Nephritic syndrome	8	13	5	7	2	4	1	4	0	0	0	0	16	7
Nephrotic syndrome	19	29	14	22	13	26	6	23	1	10	2	40	55	25
Nephritic-Nephrotic syndrome	3	5	3	4	1	2	2	8	1	10	0	0	10	4
Missing	4	6	7	10	3	6	2	8	1	10	2	40	19	9
Total	64	100	68	100	50	100	26	100	10	100	5	100	223	100

2.5.3.2 Clinical presentation by gender

More females (58%) than male (51%) presented with asymptomatic urine abnormality.

Table 2.5.3.2: Clinical presentation by gender for IgA nephropathy, 2005-2008

Clinical Presentations	Male		Female	
	n	%	n	%
Asymptomatic urine abnormality	54	51	69	58
Nephritic syndrome	9	9	7	6
Nephrotic syndrome	26	25	29	24
Nephritic-Nephrotic syndrome	4	4	6	5
Missing	11	11	8	7
Total	104	100	119	100

2.5.4: Renal function at presentation

2.5.4.1: Renal function at presentation by age

Most of the younger patients (age less than 45 years) have preserved renal function at presentation. As expected, older patients have greater degree of renal impairment (Table & Figure 2.5.4.1).

Table 2.5.4.1: Renal function at presentation by age group for IgA nephropathy, 2005-2008

eGFR (ml/min/1.73m ²)	15 ≤ 25		25 ≤ 35		35 ≤ 45		45 ≤ 55		55 ≤ 65		≥ 65		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
≥90	29	46	19	28	12	24	2	8	2	20	0	0	64	29
60-89	13	20	18	26	15	30	6	23	3	30	0	0	55	25
30-59	13	20	18	26	18	36	8	30	1	10	1	20	59	26
15-29	5	8	7	11	4	8	3	12	3	30	3	60	25	11
<15	4	6	6	9	1	2	7	27	1	10	1	20	20	9
Total	64	100	68	100	50	100	26	100	10	100	5	100	223	100

Figure 2.5.4.1: Renal function at presentation by age group for IgA nephropathy, 2005-2008

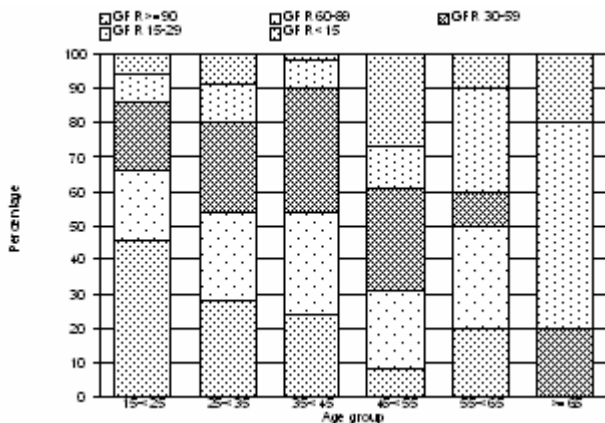
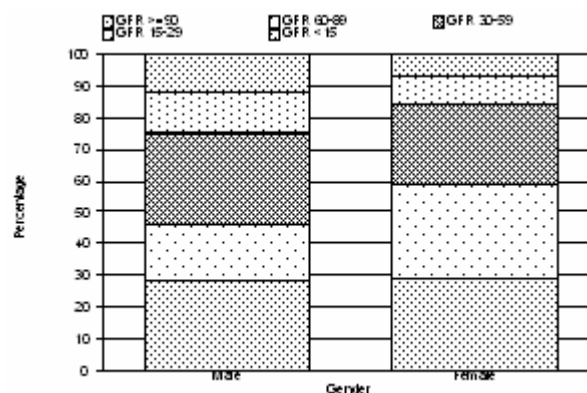


Figure 2.5.4.2: Renal function at presentation according to gender for IgA nephropathy, 2005-2008



2.5.4.2: Renal function at presentation by gender

Male tend to have worse renal function compared to female (54% vs. 41%) have eGFR less than 60 ml/min/1.73m² (Table & Figure 2.5.4.2).

Table 2.5.4.2: Renal function at presentation according to gender for IgA nephropathy, 2005-2008

eGFR (ml/min/1.73m ²)	Male		Female	
	n	%	n	%
≥90	29	28	35	29
60-89	19	18	36	30
30-59	30	29	29	25
15-29	14	13	11	9
<15	12	12	8	7
Total	104	100	119	100