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Promoting Sustainable Kidney Health: The Asia-Pacific and Beyond

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A rare case of young women with hypokalemia nephropathy associated with diabetes melitus and coexisted minimal changes disease

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Case Study : Introduction Hypokalemia, especially if persistent, can induce a variety of changes in kidney function, impairing tubular transport and possibly inducing chronic tubulointerstitial disease. Chronically low serum potassium levels <3.5 mEq/l have been associated with characteristic histopathological features of nonfatty degeneration of the convoluted tubules, varying from mild cytoplasmic vacuolization to extensive necrosis, interstitial fibrosis and sloughing of tubular cells. Common clinical findings include low urine specific gravity, polyuria, tubular proteinuria, and inactive urinary sediment. Patient concern : We examined a 20-year-old female with intermittent fatigue, persistent hypokalemia, foaming urine for 10 years and newly diagnosed with diabetes melitus. Diagnoses: Based on the results of the clinical data, including electrolytes, fasting glucose test, Hba1c ,and biopsy result. Clinical history was positive for symptoms of orthostatic hypotension and polyuria. Laboratory test showed hypokalemia, hypomagnesemia, hypocalciuria, hiperglycemia, high HBA1c , increase creatinine level and alkalosis metabolic. Urine analysis showed low urine specific gravity, polyuria, hematuria, proteinuria, and inactive urinary sediment. Kidney biopsy showed histological corresponds to glomerulonephritis without the addition of real cells (minimal changes disease) accompanied by tubulointerstitial nephritis, periglomerular fibrosis, isometric vacuolization with mild to moderate fibrotic interstitium. Intervention : The patient was prescribed potassium chloride and magnesium oral supplements and spironolactone. The patient was also suggested to maintain a high potassium diet. Gliquidon was used to maintain the blood glucose levels. Outcomes: The electrolyte imbalance including hypokalemia, hypomagnesemia and hyperglycemia were improved with a remission of the clinical manifestations. Blood sugar drops following improvement of potassium levels. Conclucions: Diagnostic renal pathology is required, especially patients with recurrent hypokalemia followed by proteinuria. Maximizing therapy of patients with hipokalemia nephropaty comprehensively to reach the target is very important, in cases with potassium 3.8 gr/dl the patient's clinical condition improves, blood sugar is more controlled and able to re-activity.

laboratory test APCN 27 January 2024_page-0001.jpg

Urine analysis	30-04-2021	09-11-2021	10-8-2023	Normal range
Warna	kuning	kuning	kuning	clear
Kejernihan	**keruh**	**keruh**	**keruh**	clear
Sedimen	-	-	-	
Leukosit	8-10	3-4	3-4	0-5 /lpb
Eritrosit	6-8	1-2	25-30	0-2 /lpb
Silinder	Negatif	Negatif	Negatif	negative
Sel Epitel	+2	Positif	Positif	negative
Kristal	Negative	Negatif	Negatif	Negatif
Bakteria	Negatif	negative	negative	Negatif
Berat Jenis	**<1.005**	**<1.005**	**<<1.005**	1.005-1.030
pH	7.0	7	7	4.5-8.0
Albumin	**+2**	**+2**	**trace**	Negatif
Glukosa	negatif	negatif	negatif	Negatif
Keton	Negatif	Negatif	Negatif	Negatif
Darah / Hb	+2	trace	+3	Negatif
Bilirubin	negative	negative	negative	Negatif
Urobilinogen	3.2	3.2	3.2	3.2-16.0
Nitrit	negative	negative	negative	Negatif
Leukosit esterase	negative	negative	negative	Negatif

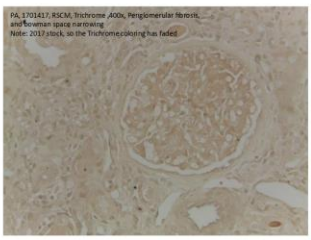
Arterial Blood gas analysis	10-08-2023	Normal range
pH	**7.455**	7.350 - 7.450
pCO2	32.70	35.00 - 45.00
pO2	100	83.00 - 108.00
HCO3	22.3	21.00 - 25.00
Standar HCO3	**24.9**	22-24
TCO2	24	21.00 - 27.00
Sat O2	97.8 %	95.00 - 98.00
base exses	0.5	2.50 - +2.50

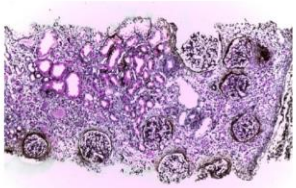
	11-12-2019	1-7-2021	25-10-2021	9-8-2023	16-10-2023	25-10-2023	16-11-2023	Normal range
Natrium	139		134	138	138	133	135	138-145 mEq/L
Kalium	**2.6**		**2.2**	**2.9**	**2.5**	**2.6**	3.8	3.5-4.7 mEq/L
Klorida	99.7		91.4	99	93	94	99	94-142 mEq/L
Asam urat		**14**	**11**	**8,3**	6			< 6 mg/dL
Mg2+	**1.56**	**1.42**	**1,56**		**1.52**		**1.58**	1.7-2.2 mg/dL
Ca2+				10.2				8.4-10.2 mg/dL

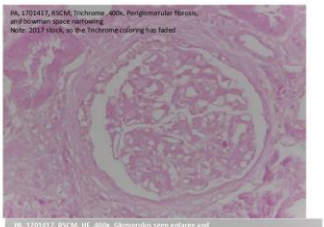
	11-12-2019	1-7-2021	25-10-2021	9-8-2023	16-10-2023	16-11-2023	Normal range
Ureum Darah	48.3	42	38	23	38	21	18-45mg/dL
Kreatinin Darah	**1.40**	**1.9**	**1.5**	**1.6**	**1.9**	**1,5**	0.22-0.9 mg/dl
eGFR	-	37.9	50,5	46	37.9	49.8	> 90

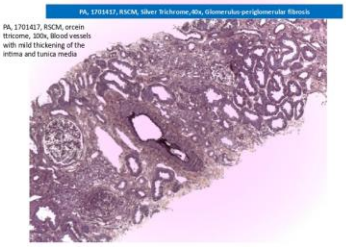
	20-6-2016	3-7-2017	3-7-2020	16-10-2023	Normal range
ANA titer	Positif Pola speckled kasar, titer 1/320 --> anti-U1-nRNP, anti-SM Kemungkinan: MCTD, SLE Anti ds-DNA 3,6 (N)	ANA Positif Pola speckled kasar, titer 1/320 --> anti-U1-nRNP, anti-SM Kemungkinan: MCTD, SLE	Negative	Ana positive ,titer 1/100 probably antibody SS-A/RO, SS-B/LA,MI-2, TIF1Y,TIF1B,KU,RNA Helicase A, Replication Protein A kemungkinan klinis Sjorgen's Syndrome, SLE, DM, SSC/PM Overlap/ Titer 1/100 dapat ditemukan pada orang normal	Ana titer negative
Anti ds-DNA		1.7	2.8		24 IUs or less : Negative
C3	121	150	146		80–178 mg/dl
C4	29	39	30		12–42 mg/dl
RF	4.7				0–20 U/ml
TSH/FT4		2.3/1.3			Tsh 0,5-5.0mIU/L Ft4 : 0.7 to 1.9ng/dL.
Protein urine quantitative 24 hours	210			**258/ volume urine 3800 cc**	
Urine calcium				**< 2**	8-16 mg/dL
Urine creatinine				**9.47**	28-217 mg/dL

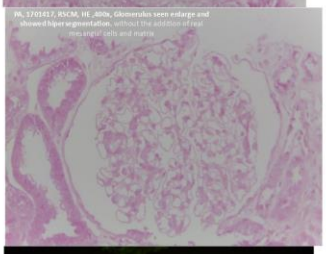
laboratory test APCN 27 January 2024_page-0001.jpg

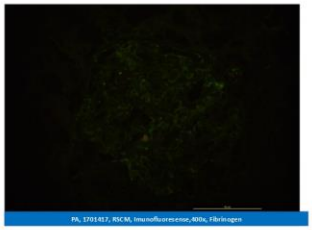



PA, 1701417, RSCM, Silver Trichrome,40x, Glomerulus periglomerular fibrosis

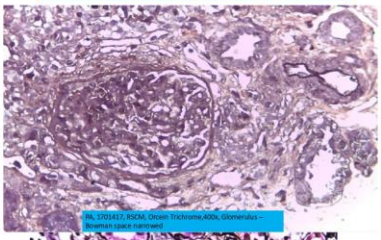


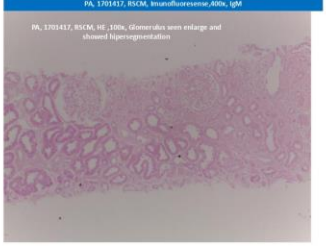


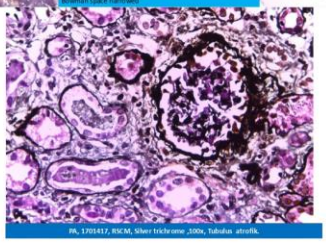



PA, 1701417, RSCM, Imunofluoresense,400x, Fibrinogen


PA, 1701417, RSCM, Imunofluoresense,400x, IgM






PA, 1701417, RSCM, Silver trichrome ,100x, Tubulus atrofik.