



Presentations, management, and clinical outcomes of von Hippel-Lindau Syndrome – A retrospective cohort study

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Background

- Rare autosomal dominant genetic disorder
- Incidence = 1 in 27,300 live births
- Causes development of multiple tumours in different organs
 - Cerebral haemangioma (75.0%)
 - Retinal haemangioma (28.1%)
 - Pheochromocytoma (34.4%)
 - Renal tumour (53.1%)
- Information on the condition in Hong Kong is scanty
 - This cross-sectional study was conducted to shed light on local presentation and management of VHL

Methodology

- Multicentre retrospective cohort study across 5 public hospitals
- Data collected and analysed includes:
 - Demographic factors
 - Health outcomes
 - Disease characteristics
 - Economic parameters
 - Treatment details

Results

Patient demographics:

- Total Patients: 32
- Males: 21 (65.6%)
- Median age at first presentation: 27.9 years
- Mean follow-up duration: 18 years

Lesion	Number of patients (%)	Age	Male (%)
Cerebellar hemangioblastoma	25 (78.1)	28.6 ± 11.6	17 (68.0)
Cerebral hemangioblastoma	6 (18.8)	23.8 ± 19.0	3 (50.0)
Brainstem hemangioblastoma	9 (28.1)	22.6 ± 8.1	5 (55.6)
Spinal hemangioblastoma	13 (40.6)	24.4 ± 7.8	8 (61.5)
Retinal hemangioblastoma	9 (28.1)	23.2 ± 7.1	5 (55.6)
Renal cell carcinoma	17 (53.1)	27.4 ± 11.3	13 (76.5)
Cystic renal lesions	4 (12.5)	27.5 ± 15.0	1 (25.0)
Pheochromocytoma	11 (34.4)	29.5 ± 13.9	9 (81.8)
Pancreatic tumour	5 (15.6)	38.6 ± 13.3	2 (40.0)
Cystic pancreatic lesion	14 (43.8)	25.4 ± 7.9	9 (64.3)
Epididymal cystadenoma	2 (6.3)	22.5 ± 2.1	2 (100)

Mortality overview

- Total deaths: 15 over 575.9 person-years
- Due to VHL Syndrome: 9 (60%)
 - Cerebral Haemangiomas: 8
 - Pheochromocytoma: 3
 - Renal Tumours: 4

Results (cont')

Mortality overview

- Other causes:
 - Pneumonia: 3 (20%)
 - Metastatic Lung Cancer: 1 (6.7%)
 - Sepsis: 1 (6.7%)
 - Congestive Heart Failure: 1 (6.7%)

Cost analysis

- Total hospitalization days: 5,635
- Total emergency department (ED) Visits: 368
- Total inpatient admissions: 1,209
- Total number of treatments received: 48
- Emergency department cost:
 - Mean cost per visit: HKD 750 (USD 96.2)
 - Annualized Cost per Patient: HKD 8,625
- Inpatient hospitalization cost:
 - Mean cost per day: HKD 3,440 (USD 441)
 - Annualized cost per patient: HKD 129,968
- Dialysis cost:
 - 6 patients requiring dialysis with 4,374 total sessions
 - Mean cost per session: HKD 6,580
 - Total cost for dialysis: HKD 28.8M
- Renal cell carcinoma (RCC) related cost:
 - Annualized ED cost per patient: HKD 2,070
 - Annualized inpatient admission cost per patient: HKD 23,965

Belzutifan usage

- Newly added to HK's Pharmacy and Poisons List in 2023
- Belzutifan was prescribed to 3 patients for 144.6 days on avg.
- Two patients required dose reduction due to side effects (anaemia and deranged liver functions)
- No recorded ED visits/inpatient admissions following initiation of Belzutifan therapy, hence healthcare cost burden between Belzutifan users and non-users could not be directly compared yet
- One user experienced fewer new-onset VHL symptoms than non-users

Future directions

1. Holistic management and multidisciplinary care
2. Establishment of subsidy schemes for Belzutifan therapy
3. Multi-national and multi-centre future trials on VHL

Conclusion

- VHL is an early-onset and recurrent multiple-systemic illness
- Huge financial and disease burdens faced by this patient population
- Huge socioeconomic burden on healthcare systems
- Multi-disciplinary care and popularisation of effective medicine (Belzutifan) can improve VHL management