

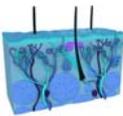
Introduction

This pamphlet offers a brief description of Birt-Hogg-Dubé syndrome (BHD), its common symptoms and recommended management.

BHD is an autosomal dominant disorder caused by mutations in the *Folliculin (FLCN)* gene found on chromosome 17p11.2.¹ It may be classified as a hamartoma syndrome. BHD syndrome is considered to be rare; the most recent estimated incidence is 1/200,000.²

BHD syndrome is characterised by the development of fibrofolliculomas, pulmonary cysts and pneumothorax, as well as a predisposition for renal cancers. Affected individuals may show any or all of these symptoms over time.¹

Fibrofolliculomas



Fibrofolliculomas are benign epidermal tumours originating from hair follicles. The fibrofolliculomas associated with BHD syndrome appear as white growths on the skin of the head and upper torso.¹ They often develop in early adulthood, and an individual may have none, one or several hundred over their lifetime. There is currently no permanent treatment, though temporary cosmetic treatments are available. Other dermatological symptoms may also include angiofibromas and oral papules.³

Pneumothorax

BHD syndrome can lead to the development of pulmonary cysts. These air-filled cysts occur on the surface of the lung and can rupture and so instigate spontaneous pneumothorax.⁴



It has not been determined which BHD patients will experience spontaneous pneumothorax or whether certain types of activity should be contraindicated.¹ It has been reported that BHD patients have a 24-29% risk of spontaneous pneumothorax, though this may be higher for patients with pulmonary cysts.^{4,5} Recommended management is similar to sporadic spontaneous pneumothorax.⁴

Pulmonary cysts are the earliest and most common BHD manifestation. It has been suggested that BHD syndrome should be considered for patients with multiple lung cysts, even when no other symptoms are present.⁶

Renal cell carcinoma



BHD syndrome is associated with the presentation of multifocal bilateral renal tumours.¹ Chromophobe renal cell carcinoma (RCC) and hybrid chromophobe and oncocytic RCC are reported to together account for >80% of BHD-associated RCC.⁷ However, other histological subtypes can occur, including clear-cell and papillary RCC.¹

The risk of RCC is considered to be around 16-30% for BHD patients.^{5,7} Regular monitoring for renal neoplasms is recommended; current suggestion is for an annual MRI starting at 20 years of age. If tumours are present, partial nephrectomy is recommended when they reach 3cm in diameter.¹

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7. Pavlovich CP *et al.* Evaluation and management of renal tumors in the Birt-Hogg-Dubé syndrome. *J Urol.* 2005;173:1482-6.