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INTRODUCTION

Introduction

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The work of Peutz in 1921 [1] and Jeghers et al. in 1949 [2] led to the definition of the Peutz-Jeghers syndrome (PJS) at a clinical level. The main characteristics are autosomal dominant inheritance, lip pigmentations, gastro-intestinal polyposis and various types of cancer. The identification of the *LKB1/STK11* gene in 1998 [3, 4] allowed DNA-based diagnosis of PJS and was the starting point for research into the role of LKB1 in molecular pathways.

In the first article of this special issue of Familial Cancer, Sebbagh et al. [5] discuss the role of LKB1 in AMPK-dependent and AMPK-independent pathways. The review by Udd & Mäkelä [6] focuses on the involvement of LKB1 in epithelial, mesenchymal, haematopoetic and germinal cell differentiation. Jansen et al. [7] argue that Peutz-Jeghers polyp formation and malignant transformation are separate manifestations of one molecular mechanism. The role of LKB1 in lung cancer and possible therapeutic implications are described by Sanchez Cespedes [8].

Two important clinical issues in PJS are complications due to small bowel polyps and a high risk of malignancies, both inside and outside the gastro-intestinal tract. Main aspects of surveillance and treatment of PJS are summarized by Latchford & Phillips [9] and Riegert-Johnson et al. [10], respectively.

Insight into the molecular pathogenesis of PJS has led to trials on chemoprevention and targeted therapy for this patient group. Kuwada and Burt [11] consider the rationale for mTOR inhibition as a chemopreventive strategy in PJS. Subsequently, Sugars [12] shares her knowledge gained from the PJS Online Support Group and through the author's personal experience as PJS patient. Finally, Lodish and Stratakis [13] discuss the dermatological features of PJS and the clinical differentiation of PJS from other familial lentiginosis syndromes.

In France, seven regional groups called Canceropôles have coordinated the research units of scientific institutions (Institute National de la Santé et de la Recherche Médicale, Centre National de la Recherche Scientifique), university hospitals, comprehensive cancer centres, pharmaceutical companies and biotechnology institutions. In Marseille, on June 25th and 26th, 2010, the Canceropôles "Provence Alpes Côte d'Azur" and "Lyon, Auvergne et Rhône Alpes" organised a cancer cell signalling meeting on "the LKB1-AMPK pathway, from basic science to clinical applications" (http://www.lkb1.com).

This meeting formed the inspiration for the series of reviews published in this issue of Familial Cancer, written by experts in the field. The translation of basic research into clinical practice is difficult and challenging. We hope that the current format of bringing aspects of research and the clinic together will be helpful for both researchers and those involved in the surveillance and treatment of PJS patients.

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References

1. Peutz JLA (1921) Over een zeer merkwaardige, gecombineerde familiaire polyposis van de slijmvliezen van den tractus intestinalis met die van de neuskeelholte en gepaard met eigenaardige pigmentaties van huid en slijmvliezen. Ned Maandschr Geneeskd 10:134–146

2. Jeghers H, McKusick VA, Katz KH (1949) Generalized intestinal polyposis and melanin spots of the oral mucosa, lips and digits. A syndrome of diagnostic significance. N Engl J Med 241:993–1005, 1031–1036
3. Hemminki A, Markie D, Tomlinson I et al (1998) A serine/threonine kinase gene defective in Peutz-Jeghers syndrome. Nature 391:184–187
4. Jenne DE, Reimann H, Nezu J (1998) Peutz-Jeghers syndrome is caused by mutations in a novel serine threonine kinase. Nature Genet 18:38–43
5. Sebbagh M, Olschwang S, Santoni MJ, Borg JP. (2011) The LKB1 complex-AMPK pathway: the tree that hides the forest. Fam Cancer doi:10.1007/s10689-011-9457-7
6. Udd L, Mäkelä T (2011) LKB1 signaling in advancing cell differentiation. Fam Cancer doi:10.1007/s10689-011-9441-2
7. Jansen M, Langeveld D, de Leng WW, Milne AN, Giardiello FM, Offerhaus GJ (2011) LKB1 as the ghostwriter of crypt history. Fam Cancer doi:10.1007/s10689-011-9469-3
8. Sanchez-Cespedes M (2011) The role of LKB1 in lung cancer. Fam Cancer doi:10.1007/s10689-011-9443-0
9. Latchford A, Phillips RK (2011) Gastrointestinal polyps and cancer in Peutz-Jeghers syndrome: clinical aspects. Fam Cancer doi:10.1007/s10689-011-9442-1
10. Riegert-Johnson D, Roberts M, Gleeson FC, Krishna M, Boardman L (2011) Case studies in the diagnosis and management of Peutz-Jeghers syndrome. Fam Cancer doi:10.1007/s10689-011-9438-x
11. Kuwada SK, Burt R A rationale for mTOR inhibitors as chemoprevention agents in Peutz-Jeghers syndrome. Fam Cancer doi:10.1007/s10689-011-9471-9
12. Sugars S (2011) Peutz-Jeghers syndrome: a patient's view. Fam Cancer doi:10.1007/s10689-011-9453-y
13. Lodish MB, Stratakis CA The differential diagnosis of familial lentiginosis syndromes. Fam Cancer 2011 doi:10.1007/s10689-011-9446-x