Shall Hemangioma be considered an Unmet Medical Need?

Pierre A. Guertin*
Department of Psychiatry and Neurosciences, Laval University, Canada

Various Forms and Pathophysiological Causes

A hemangioma is a benign noncancerous swelling or growth formed by an increase collection of blood vessels. They are often localized on the skin although many other organs may be affected such as the liver, kidney, lung, colon, brain and spinal cord. They are typically occurring at birth (infantile hemangioma as – IH) but may grow subsequently.

The specific underlying causes remain unclear. As for adenoma, hemangiomas developing internally such as on the liver are believed to be hormone-dependent (i.e., sensitive to estrogen) – indeed, some menopausal women receiving estrogen replacement therapies have been found to develop liver hemangiomas [1,2].

Unlike dermatological hemangiomas, cavernous hemangiomas (brain and/or spinal cord) can appear at all ages. Asymptomatic cases are usually associated with individuals developing malformations sporadically, whereas symptomatic ones are associated with inherited genetic mutations – specifically at the RIT1/CCM1, MGC4607/CCM2, and PDCD10/CCM3 level, on chromosomes 7q, 7p, and 3q [3,4]. This said, sporadic cases can sometimes be associated also with genetic mutations [5].

No Treatment Prevents Them Whereas No Safe Treatment Eliminates Them

Hemangiomas are usually small but, sometimes, may grow quite large (several centimetres in width) or become lesions requiring surgical procedures for removal. There are no known ways to prevent their growth on the skin or, internally, on organs.

A single small-size hemangioma may need no particular intervention as it will often go away on its own. However, for the other cases, an intervention will be required. At the dermatological level, lesions or sores may benefit from corticosteroids (e.g., dexamethasone, prednisone), interferon therapy (e.g., IFN-alpha2a), beta-blockers (propranolol) or antineoplastic drugs (e.g., vincristine) although clear risks and suboptimal results have been sometimes associated with these drugs specifically in children (IH) [6,7].

It is increasing clear that different pathological mechanisms are involved – depending probably upon site, organ, size and/or time (asymptomatic or not). Currently used drugs can generally reduce their size, as mentioned above, although complete elimination is rare. Surgeries may allow complete removal in some cases (dermatological origin) although, for cavernous hemangiomas, surgeries are unlikely to constitute an ideally suited approach given the significant risk associated with such interventions on the brain – i.e., related-risk of infections and irreversible damage or functional loss due to destroyed or damaged neurons.

All in all, I strongly believe that hemangiomas, in general, shall be considered still as an unmet medical need indication that critically requires additional research for the development of safe and potent drug treatments aimed either at preventing (e.g., in the case of familial – genetic mutation cases) or removing them appropriately. One avenue could be to investigate clinically the efficacy of combination products comprising, for instance, corticosteroids, beta-blockers, and antineoplastic molecules in lower doses. On the longer term, it may be of interest to identify new molecules capable of contributing to the pharmacological removal of hemangiomas. From an epidemiological standpoint, hemangiomas are extensively found (0.5% of the overall population [5]) which even further supports the idea that new treatments should be considered a priority by researchers in this field.

REFERENCES


