Objectives To report the clinical characteristics and investigation findings of a series of Hallucinogenic Persisting Perception Disorder (HPPD) cases and review previous HPPD case reports from the literature.

Methods Case studies were collected from consultant neuro-ophthalmologists between 2019 and 2020. PubMed and MEDLINE databases were searched for case reports between 2000 and 2020 using the terms ‘hallucinogenic persisting perception disorder’ and ‘case report’.

Results Thirteen case studies were reviewed. Lysergic acid diethylamide (LSD), 3,4-Methyl endoxygen methamphetamine (MDMA) and cannabinoids were the most common drugs used prior to HPPD onset. Twenty-two different visual symptoms were described. The most commonly reported were visual snow, floaters, palinopsia, photophobia and photopsia. Ophthalmic and neurologic investigations were normal. Two patients fully recovered after benzodiazepine treatment or no treatment. Twenty-four literature case reports were identified. LSD, MDMA and cannabinoids were the most frequent drugs used. Seventeen different visual symptoms were described. Ophthalmic and neurologic investigations showed no clinically significant findings in the majority of cases. 25% of cases fully recovered after treatment with benzodiazepines, eye movement desensitisation and reprocessing therapy, anti-epileptic drugs or no treatment.

Conclusions A wide variety of hallucinogenic and non-hallucinogenic recreational substances are implicated in HPPD. Clinical presentation includes a diverse range of positive visual phenomena and overlaps with Visual Snow Syndrome (VSS). Neurologic and ophthalmic investigations are typically normal. Management is complicated due to a lack of high-quality evidence. Controlled trials are needed to better understand the pathophysiology and optimize treatment for HPPD.