Recently it has been shown that plasmonic effects in hyperbolic metamaterials may facilitate overcoming the diffraction limit and enhance the contrast function of an image by filtering background radiation. Unfortunately, the contrast function of such a dark-field hyperlens degrades in the deep-subwavelength regime. We push forward the concept of the contrast function revival in the subwavelength imaging by introduction of the proper phase difference between coherent sources. To study this effect we develop a simplified theory of the wave propagation through a hyperbolic metamaterial and show that, in principle, two sources standing apart at any subwavelength distance can be distinguished. We suggest two feasible designs, the first of which employs the obliquely incident light, while the second one is based on a properly designed metasurface. The concept can be used in high-contrast subwavelength microscopy.