Recent developments in the theory of orthogonal polynomials on the unit circle have emphasized the importance of the CMV matrices (a special class of five-diagonal unitary matrices, which can be viewed as the unitary analog of discrete Schrödinger operators). We consider random CMV matrices with slowly decaying random coefficients and we prove that the asymptotic local statistical distribution of their eigenvalues is Poisson (no correlation). In the case of rapidly decaying coefficients, we prove that there is strong eigenvalue repulsion. This work is joint with Rowan Killip. (Received September 21, 2007)