Sumsets of convex and semiconvex sets

We say a finite set $A = \{a_1 < a_2 < \cdots < a_k\}$ of real numbers with the property that $a_i - a_{i-1} < a_{i+1} - a_i$, for any $1 < i < k$ is *convex*. Paul Erdos asked what can we say about the sumset of convex sets. He conjectured that $|A + A|$ is quadratic in k. (Given two sets $A, B \subset \mathbb{R}$, the *sumset* of A and B is $A + B = \{a + b : a \in A \text{ and } b \in B\}$.) We are very far from solving (proving or disproving) the conjecture, but there are several interesting results related to the conjecture. I will survey the results and will mention further open problems and conjectures.