



Figure 26.1 Antibody-dependent cell cytotoxicity. NK cells mediate antibody-dependent cell cytotoxicity (ADCC). ADCC involves a sandwich of an NK cell and a target cell, where an antibody resides inside the sandwich. In order for the NK cell to kill the target cell, what is also required is the expression of specific pairs of activating/inhibiting ligands and receptors, which reside on both the NK cell and the target cell. These pairs are not shown in the diagram

When antibodies mediate tumor killing by NK cells, the antibody bridges the Fc receptor of the NK cell and the target antigen of the tumor cell. The antigen residing on the surface of the tumor cell can be a typical membrane-bound protein, or it can take the form of a peptide that is being presented by MHC class I of the tumor cell (33). Either way, the combination of the NK cell and antibody can cause death to the tumor cell. The formation of the bridge is shown in Fig. 26.1.

The mechanism of killing is as follows. When the NK cell contacts the tumor cell, vesicles (granules) inside the NK cell discharge their contents (degranulation) next to the tumor cell, where the discharged contents cause the tumor cell to be lysed and killed. The contents of the granules include perforin and granzyme (34). NK cells are not antigen specific, in contrast to the situation of $CD8^+$ T cells. $CD8^+$ T cells also kill their target cells by releasing perforin and granzyme. Using a term from classical immunology (opsonization), the function of the antibody is to opsonize the tumor cell (35).

The process where an NK cell kills a tumor cell, or other target cells, such as virus-infected cell, is called antibody-dependent cell cytotoxicity (ADCC). Pharmaceutical

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