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Antithyroid Drug-Induced Agranulocytosis
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Underlying Pathophysiology
As supported in the case study, there is an instance in which bone marrow suppression can occur. The suppression of bone marrow occurs in agranulocytosis with the development of pancytopenia. The agranulocytosis can be severe, and it is supported with aplastic marrow, which occurs when the bone marrow is not able to produce mature blood cells. The suppression can occur in a case of a cytoplasmic swelling and irregularity in staining (Rosove, 1977). The suppression of agranulocytosis in antithyroid drug treatment has yet to be definitively pinpointed.

Many theories suggest that the drug gains entry into the bone marrow, where the sensitivity of the granulocytes will the shift to the left. This increase in immature cells is due to the cytoplasmic swelling and irregularity in staining (Rosove, 1977). This shift to the left, coupled with aplastic marrow, can lead to the occurrence of granulocytopenia and its adverse affects. Giving IV fluid is important to replenish electrolyte and fluid volume losses. As nurses and nurses’ aids, it is imperative to monitor the patient’s intake and output closely. Identifying precipitating factors can be done in a variety of methods. As previously stated, agranulocytosis occurs predominately in elderly females with the presentation of fevers. By monitoring temperature, heart rate, and blood pressure for acute changes, it will allow for prevention and early diagnosis. Other symptoms are listed in Table 1, which will aid the nurse in identifying symptoms.

Significance in Pathophysiology
The significance of the pathophysics is important to practitioners and registered nurses because of the potential for bone marrow suppression of bone marrow and the ability of the antithyroid drug to affect the bone marrow. This limits one’s immune response and the ability of the body to fight off infections. The symptoms are what can be attributed to stress of everyday life. Once diagnosed, individuals are often unable to tolerate further effects of antithyroid drug reaction. Although rare, agranulocytosis is a harmful side effect that can lead to serious infection and even death. By monitoring acute effects and early detection, adverse affects and monitoring blood counts and occurrence can continue to be low.

References

Study showing the incidence of agranulocytosis with two different types of antithyroid drug. (Nakamura, H., Miyoshi, A., Miyoshi, N., Imagawa, J. Table 3).