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**Neutropenia**

**Presentation**

Definition

Slight neutropenia: 1-1.5 x109/L. Moderate neutropenia: 0.5-1x109/L. Marked neutropenia <0.5 x109/L.

Ethnic group: African and Afro-Caribbean adults have lower normal neutrophil count ranges down to 1x109/L.

**Clinical Findings**

* If incidental and isolated slight neutropenia less concerning than if associated with other cytopenias e.g. monocytopenia, anaemia, thrombocytopenia. However need repeat to ensure resolves.
* The blood film comment may be ‘mild neutropenia with reactive lymphocytes’. In this case the most common cause would be a viral illness but it is important to check for other causes especially reviewing medications and repeating the FBC to ensure that resolves in 4 to 6 weeks (or sooner if indicated).

**Causes**

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| Bone marrow failure: defect in production | Haematinic deficiency, malignancy: haematological or solid. |
| Peripheral consumption: non immune mediated | Benign familial and ethnic neutropenia (Black African background) – increased marginalisation of the neutrophils, not associated with infections  Cyclical neutropenia s  Post-infection |
| Peripheral consumption: immune mediated | Autoimmune neutropenia: in isolation or associated to autoimmune diseases, haemolytic anaemia, ITP  Chronic benign neutropenia – infants and children, usually spontaneously resolves by age 4. Likely immune mediated. |
| Drugs and toxics | Alcohol  Excluding cancer chemotherapy, the highest risk categories are antithyroid drugs, co-trimoxazole, sulfasalazine and neuropsychotropics. Many drugs may cause mild neutropenia - e.g. NSAIDs, sodium valproate. Check BNF or SPC. Usually counts recover after stopping drug. |
| Others | Congenital (rare)  Felty’s syndrome: rheumatoid arthritis, splenomegaly, neutropenia |

**History**

* Recent viral illness or infection
* Past medical history including previous malignancy and chemotherapy/radiotherapy (increased risk of secondary malignancy), autoimmune conditions, rheumatoid arthritis.
* Drug history including over the counter medication.
* Sexual and travel history (infections)
* Social history including alcohol, use illicit drugs and contact with of toxics.
* Family history including autoimmune conditions.

**Symptoms and Signs**

* Symptoms of neutropenia and duration: recurrent infections (ask timing – important in cyclical neutropenia), ulcers
* Other signs of other cytopenias: anaemia, thrombocytopenia
* Symptoms suggestive of malignancy: constitutional symptoms and organ specific.
* Symptoms suggestive of autoimmune condition.

**Investigations**

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| Investigations in primary care should include | Investigations to consider in primary care if persistent unexplained neutropenia |
| FBC and film should be performed when neutropenia first found | Haematinics |
| Repeat FBC after 4 weeks or sooner if clinically indicated to check neutropenia resolves. | U+E, LFTs, bone profile, TFTs |
|  | Immunoglobulins with electrophoresis |
|  | Viral screen: HIV (Hep B and C, EBV, CMV, HSV, VZV, Toxoplasma, Syphilis) |
|  | Autoimmune profile |

**Referral**

* Neutrophils < 1 x 109/L and patient unwell/febrile - refer urgently for admission
* For patients that are well and afebrile. Treat reversible factors for example, stopping culprit drug, correcting haematinic deficiency and then for:

1. Neutrophils < 1 x 109/L - repeat FBC with blood film examination within one week. If neutropenia persists without cause refer urgently.
2. Neutrophils 1-1.5 x 109/L repeat with blood film at 6 weeks and refer to haematology if neutropenia is progressively severe or other cytopenias or discuss with haematologist if persistent but stable.

**References**

1. W S A Smellie et al. Best practice in primary care pathology: review 7. Journal of Clinical Pathology 2007;60:458-46.