

Eosinophilia

Presentation

Definition

An eosinophil count $>0.4 \times 10^9 /L$. Eosinophilia can be divided into mild ($0.4- 1.5 \times 10^9 /L$), moderate ($1.5 - 5 \times 10^9 /L$) or severe $>5 \times 10^9/L$.

Clinical Findings

Worldwide, the most common cause of eosinophilia is parasitic infestation and this remains an important cause of eosinophilia in Europe. The 4 most common causes of an eosinophilia documented in an Italian series of nearly 2000 patients ^[2] were atopy including asthma 79.7%, parasites 8.2%, haematological neoplasm 2.4% and allergic / atopic skin disease 2.1%. An adequate travel history is essential as failure to diagnose these infections can have significant consequences.

Causes

These can be divided into primary, reactive (secondary) and hypereosinophilic syndrome.

Primary causes (rare)	<ul style="list-style-type: none"> • Myeloproliferative disorders (polycythaemia vera, essential thrombocythaemia & idiopathic myelofibrosis), chronic myeloid leukaemia, acute or chronic eosinophilic leukaemia and systemic mastocytosis. • May also be present in association with Hodgkin's lymphoma and T-cell lymphoma.
Secondary causes	<ul style="list-style-type: none"> • Infections: especially those due to parasites (most commonly helminthes - hookworm, schistosomiasis - but also giardiasis or other protozoal infections and strongyloides) • Drugs (penicillins, carbamazepine, sulphonamides are common but any drug is a possible cause) • Asthma / atopic dermatitis / acute urticarial • Connective tissue disease (rheumatoid arthritis, polyarteritis nodosa, Wegener's granulomatosis) • Solid malignancy (breast, renal and lung cancer) • Respiratory disease (Churg-Strauss syndrome, bronchiectasis, cystic fibrosis).
Hypereosinophilic syndrome	Can be made once all the above causes of eosinophilia have been ruled out. It is associated with end-organ damage, in particular, cardiac dysfunction.

Symptoms and Signs

Take a full clinical history including drug history, travel history, contact with animals and history of a rash or diarrhoea in addition to symptoms which may suggest an underlying cause (see above for differential diagnosis). Symptoms suggestive of underlying malignancy should be noted.

Undertake an examination to look for causes of eosinophilia in addition to consequences of tissue infiltration by eosinophils:

- Respiratory dysfunction
- Cardiac dysfunction
- GI dysfunction / hepatosplenomegaly
- Focal neurological signs
- Skin rashes

Investigations

Basic Investigations in primary care that may be useful	Investigations for travellers
Repeat full blood count and blood film in 1-2 weeks if eosinophil count is > 1.5 x10 ⁹ /L to check if eosinophilia persistent.	All returning travelers with eosinophilia should have stool microscopy and Strongyloides serology
If the eosinophilia is mild and there is an obvious cause, there is no need to repeat the FBC.	Travellers returning from Africa should have in addition: <ul style="list-style-type: none"> •Terminal urine (sample collected once the bladder has nearly been emptied) collected at midday for schistosomiasis ova. •Schistosomiasis serology (note latter may not be positive for up to 22 weeks after infection) •Filaria serology if returning from West Africa
Inflammatory markers ie CRP	
Renal and liver function	
Autoantibodies if evidence of autoimmune disease (ANA, ENA, anti- dsDNA, RhF, ANCA)	In returning travellers with eosinophilia discussion with the microbiologists should be considered.
CXR	

Referral

- Persistent eosinophilia for >3months without an obvious cause after investigation as above.
- Any level of eosinophilia with evidence of end-organ damage (cardiac, gastrointestinal, pulmonary or neurological symptoms) which is not related to another underlying medical condition.
- Eosinophils >5 where the cause is not immediately apparent

References

- 1) Sims H, Erber WN. Investigation of and incidental finding of eosinophilia. BMJ 2011 342: 2670.
- 2) Lombardi C et al. Eosinophilia and disease: a clinical revision of 1862 cases. Arch Intern Med 2003 163: 1670-3.
- 3) Smellie WSA, Forth J, Smart SRS. Best practice in primary care pathology: review 7. J Clin Pathol 2007 60: 458-65.