Please note – this learning resource has been produced by the GUMS Academic Team. It is possible that there are some minor errors in the questions/answers, and other possible answers that are not included below. Make sure to check with other resources.

## Case 1

Jane is a 49 year old office worker. She presents to her GP practice complaining of joint pain. Being the good medical student that you are, you take a thorough history from Jane while the GP finishes up with another patient.

**What are some differential diagnoses for her joint pain?**

**Explain briefly the differences between RA and OA.**

|  |  |  |
| --- | --- | --- |
|  | **Osteoarthritis** | **Rheumatoid arthritis** |
| **Broad classification of type of joint disease** |  |  |
| **Joints typically affected** |  |  |
| **When does the joint pain occur?** |  |  |
| **Other signs and symptoms** |  |  |
| **Pathogenesis (and what structure in the joint is damaged)** |  |  |
| **Features on X-ray** |  |  |
| **Features on aspiration of joint fluid** |  |  |

**Are the following factors risk factors for OA, RA or both?**

* Obesity
* Female gender
* Family history
* Congenital joint deformities
* Type 1 diabetes mellitus
* Older age >50
* Previous joint injury
* Smoking
* Manual labour

**The doctor orders a large number of blood tests (including but not limited to):**

* Antinuclear antibody (ANA)
* Rheumatoid factor antibodies
* Anti-CCP (cyclic citrullinated peptide) antibodies
* Uric acid
* Ross river virus serology (IgM)
* Ross river virus serology (IgG)

From the thorough history you took earlier, you know that Sally’s joint pain is predominantly in the MCP and PIP joints in her hands, her wrists and her elbows, but sparing the DIP. She has recently noticed some pain in her ankle. Her joint pain has been ongoing for one year. She reports often feeling tired and unwell and complains of morning stiffness that lasts for longer than 1 hour each day. Sally’s blood tests results show elevated levels of anti-CCP and rheumatoid factor, elevated ESR and CRP.

**What is the most likely diagnosis, and why?**

**Explain what an elevated CRP and ESR indicates?**

Since you are a great student, you have studied all themes in med school equally. The doctor is keen to test you so hands you a study (excerpt below).

*The sensitivity and specificity of anti-CCP reactivity for the diagnosis of rheumatoid arthritis (RA) were 66.0% and 90.4%, respectively. This compared with the sensitivity and specificity of RF for RA at 71.6% and 80.3%.*

**What does this mean in the context of Sally’s results.**

NOTE: The take home message here is that in rheumatology there are a number of antibodies and blood markers that are investigated. Each has their own specificity and sensitivity. The implication of this is that the presence of absence of these markers alone does not necessarily rule in or out certain diagnoses. It is important to consider these investigations together in the context of the patient’s clinical presentation.

**You also notice Sally’s Haemoglobin level was low. In the context of her presentation, why might this be the case?**

**What diagnosis might a positive anti-nuclear antibody increase the likelihood of? What are some clinical features of this disease?**

**What diagnosis does an elevated uric acid indicate the likelihood of?**

**What is the importance of asking a patient presenting with joint pain about their travel history?**

**What is the significance of the IgM vs IgG results for Ross River Virus serology and Barmah Forest virus serology?**

**Complete the table to explain the rationale for using the following medications to treat rheumatoid arthritis.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Medication** | **Class of Drug** | **Mechanism of action** | **Rationale for use in RA** |
| **Prednisolone** |  |  |  |
| **Methotrexate** |  |  |  |

You prescribe Sally methotrexate. She returns to you 3 weeks later stating that it is not working.

**What would you say to Sally? What could you have done differently?**

Sally tells you she and her partner are about to start trying to fall pregnant.

**What would you say to her?**

# Case 2

Martha is a 79 year old woman who is brought into the Emergency Department by ambulance following a fall while showering at home. Martha says that she slipped over and fell onto her right hand and bottom, but did not hit her head. She complains of worsened back pain (she has chronic back pain from a previous car accident) and right wrist pain, which limits movement.

**Based on factors in the scenario, explain why Martha’s is more likely to present to ED with this presentation, compared to her 46 year old son Marcus.**

You suspect Martha has osteoporosis.

**Very briefly explain what osteoporosis is and the major potential complication.**

**Explain the physiology of normal bone remodelling and how this changes in osteoporosis?**

**Explain briefly why osteoporosis is more common in post-menopausal women?**

**Explain the use of the following medications to treat osteoporosis.**

|  |  |
| --- | --- |
| **Medication/Class of Drug** | **Mechanism of action** |
| **Bisphosphonate** |  |
| **Denosumab** |  |
| **Raloxifene (selective oestrogen receptor modulator)** |  |

After explaining these medications to Martha, she tells you she has heard that oestrogen receptor modulators can increase the risk of breast and endometrial cancer.

**What do you say to her?**

**What dietary and nutritional advice would you give to Martha?**

After undergoing surgery to reduce her wrist fracture, she goes on to develop osteomyelitis. The doctors commence empirical antibiotic therapy.

**What is the most common causative organism in osteomyelitis?**

The joint is aspirated and the fluid is tested for microscopy, culture and sensitives. The causative organism is determined to be methicillin resistant *Staphylococcus aureus*.

**Would you change the antibiotics? Why/why not?**

Marcus (Martha’s son) asks you if there is anything that they can do to help prevent any more falls. **NOTE:** **Be sure to look up falls prevention in the elderly in your own time**

Martha also suffers from chronic back pain, following a car motor vehicle accident many years ago. One of her long term medications is an opioid agonist.

**Briefly explain the mechanism of action of opioid analgesics. What receptor do they act on? Where are these receptors?**

By acting on these receptors found in other areas of the body, opioid analgesics have a wide range of adverse effects.

**Complete the below table, outlining the effects on various organs, systems or processes.**

|  |  |
| --- | --- |
| **Organ/System/Process affected** | **What is the effect?** |
| **Eyes** |  |
| **Mental state** |  |
| **Respiratory drive (in brain stem)** |  |
| **Gastrointestinal motility** |  |
| **Blood pressure** |  |
| **Urticaria (hives) and pruritus (itching)** |  |

**Explain the rational for not using opioid analgesics in patients with asthma.**

**One (rather annoying) bonus question. Make sure you can differentiate between the following ‘spondy’ terms.**

|  |  |
| --- | --- |
| **Spondylosis** |  |
| **Spondylitis** |  |
| **Spondylolyisis** |  |
| **Spondylolithesis** |  |

On the radiologist’s report for Martha’s spine imaging, it states she has spondylosis. Conveniently, this is the only detail there as the rest of the report is missing.

**Describe some of the features that may have been seen on imaging.**