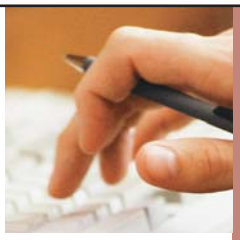

Obesity case study

Eye series - 14

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Case history

A 65 year old woman requires cataract surgery. Her ophthalmologist has asked the general practitioner for a complete medical check up before proceeding to surgery. The patient has a long term history of morbid obesity and is a poorly controlled insulin dependent diabetic.

Question 1

Can obesity lead to vision loss?

Question 2

Which ocular signs may indicate the presence of further systemic change?

Question 3

Does obesity increase the risk of side effects from ocular medication?

Question 4

What are the general considerations for surgery on an overweight patient?

Question 5

Does the risk of ocular complications increase during cataract surgery due to obesity or related comorbidities?

FEEDBACK

Answer 1

Obesity has recently been linked to the early formation of cataracts. Younan et al found that a body mass index > or = 30 kg/m^2 was significantly associated with an increased incidence of both cortical and posterior subcapsular cataracts.[1] High waist-hip ratio or abdominal obesity has been shown to be a determinant for retinopathy among the general population.[2] This risk is higher in women than men. Similarly Seddon et al found that a higher waist circumference was associated with a two-fold increased risk for the progression to advanced age related macular degeneration.[3]

Idiopathic intracranial hypertension is a condition of unknown cause characterised by an increase in intracranial pressure (ICP) with no other focal neurological abnormalities. Papilloedema (blurred optic disc) is seen in over 90% of cases as a result of the raised ICP (*Figure 1*). This may result in a loss of visual field. The incidence of this condition is significantly higher among overweight women, particularly of child bearing age.

Although ocular changes may be directly related to obesity, various comorbidities also serve as factors in the presence of eye disease. Diabetes has long been associated with the progression of cataracts and retinopathy leading to blindness. Hypertension is the most common cause of central retinal artery occlusion in patients and therefore represents a significant risk to the visual status of the obese patient. A retinal artery occlusion will lead to a sudden, painless loss of vision (*Figure 2*). Smoking further increases the possibility of this condition. Sleep apnoea is regularly associated with overweight or obese patients. Research is beginning to establish a firm relationship between the presence of sleep apnoea and the incidence of glaucoma, an insidious condition that slowly leads to blindness.

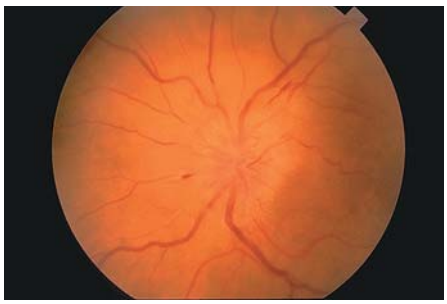

Figure 1. Papilloedema (note the blurred or choked appearance of the discs)

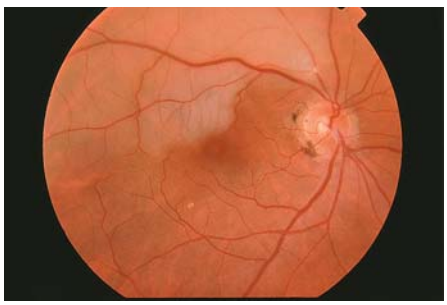

Figure 2. Superior retinal artery occlusion (note area of ischaemia due to occlusion)

Answer 2

Ocular changes commonly represent the initial presentation of many systemic conditions. Diagnosis of ocular disease will often lead to a broader health investigation. Arcus senilis is a common condition seen in older

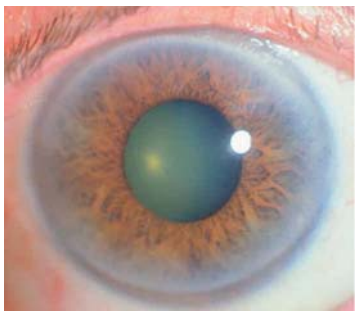

Figure 3. ***Arcus senilis*** **(note the ring of fatty deposits around the peripheral cornea)**

patients. Usually bilateral in presentation, a fine line of lipid deposits is seen around the peripheral cornea (*Figure 3*). Although present in the majority of patients over 80 years of age the diagnosis in younger patients may also indicate the presence of hyperlipidaemia.

The diagnosis of arteriosclerosis may be indicated by the various changes in the retinal vessels seen on dilated examination. Arteriovenous nipping, vessel tortuosity and a 'copper or silver wire' appearance of the vessels may be the first objective sign of change due to this condition.

Data has suggested a relationship between hypertension, obesity and cataract formation. Any diagnosis of early cataracts should therefore require referral to a general practitioner for thorough examination. Diabetes may lead to significant ocular complications such as cataracts and retinal pathology. The development of diabetic retinopathy will also commonly indicate the corresponding presence of kidney disease.

Answer 3

In the healthy person, the risk of side effects occurring from ocular medication is low, however, in the obese patient the various comorbidities serve to increase the possibility of potentially life threatening complications when on treatment. In order to prevent vision threatening complications from adverse effects it is necessary for the GP to obtain a careful history and consider the coexisting conditions. Beta adrenergic blockers are commonly used in the treatment of glaucoma to reduce the production of aqueous humour and lower the intraocular pressure. Systemic side effects can include bradycardia, cardiac arrest and acute bronchospasm. An obese patient may be further susceptible to these complications due to coexisting cardiac and respiratory conditions.

Answer 4

Although the presence of obesity and various comorbidities does not represent a direct contraindication to general surgery, these patients represent high risk surgical candidates and therefore require additional care and planning before proceeding. The patient's condition should be stable before surgery and any potential conditions that may increase the risk of intraoperative complications such as high blood pressure, should be strictly controlled. Delay in surgery may be necessary in extreme cases. The patient with diabetic retinopathy must be aggressively treated with laser at least 3 months before surgery otherwise significant worsening in maculopathy and vision postoperatively can occur. It is also important for the specialist to consider the technical aspects of surgery to avoid possible complications. Large patients have a higher incidence of venous stasis disease increasing the risk of conditions such as deep vein thrombosis. Correct positioning and the use of additional equipment may be necessary to avoid such complications. Poor positioning may also lead to mechanical blockages of the airways already under stress due to excessive weight and must be considered. In immediate postsurgery recovery, this continues to be an important factor as the patient is likely to remain in a sedated state increasing the compromised state of the airways. The use of pain management may represent a further risk of impairing the respiratory status. Narcotic drugs should be avoided as much as possible.

Answer 5

The incidence of intraoperative complications during cataract surgery is minimal. Recent advances in the surgical procedure and increased technology have lead to a significant decrease in the incidence of vision threatening complications. The compromised patient however, still represents a significant challenge to the ophthalmologist. The diabetic patient commonly dilates poorly, making surgery technically more difficult and increasing the risk of the capsular bag rupturing. Capsular rupture may complicate the placement of the intraocular lens, possibly requiring either suturing the lens in place or the placement of the intraocular lens into the anterior chamber. In severe cases, further intraocular surgery may be required. Patients with diabetes, or other systemic conditions such as hypertension, are also at greater risk of developing cystoid macula oedema postsurgery. This condition is characterised by a decrease in vision that occurs after the first few weeks postsurgery. Most episodes will resolve with topical steroids and anti-inflammatories, however, orbital injection or systemic treatment may be required in more severe cases.

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