PROLAPSED INTERVERTEBRAL DISC **MEDICAL APPENDIX**

(INTERVERTEBRAL DISC LESION)

DEFINITION

1. Prolapsed intervertebral disc is the term applied to the protrusion of a portion of the nucleus of an intervertebral disc into the spinal canal.

ANATOMY

2. Th intervertebral discs lie between the adjacent surfaces of the bodies of the vertebrae, adhering to the cartilage plates which cover the upper and lower surfaces of the vertebral bodies.

3. The periphery of the disc consists of a ring of tough fibro-cartilage known as the **Annulus Fibrosus**, while lying between the cartilage plates and surrounded by the annulus is soft gelatinous material under tension, this material being known as the **Nucleus Pulposus**.

4. The bodies of the vertebrae are thus separated from each other by a highly elastic tissue mass - the nucleus pulposus - compressed between the vertebral surfaces and largely responsible for the resilience and flexibility of the vertebral column.

PATHOLOGY

5. The intervertebral disc shows a greater tendency to degenerate with age than any other tissue in the body, one result being that, in the middle decades of life, well-preserved discs are the exception rather than the rule.

6. These degenerative changes are especially likely to occur in the lower lumbar and lower cervical regions, gradually causing fragmentation of the nucleus pulposus and softening of the annulus fibrosus. They frequently represent the first stage of a three stage cycle of pathological change leading to prolapsed intervertebral disc.

7. In the second stage, a portion of the nucleus protrudes through a tear in the softened annulus at its weakest part, this being postero-lateral, and the extruded material may impinge on the adjacent nerve roots or the spinal cord itself. The protrusion may be episodic, may continue intermittently over a period of months or years and it accelerates the degeneration of the disc.

8. The final stage that of fibrosis or repair, overlaps the second and progresses over a period of years until the defective disc is replaced by fibrous tissue.

CLINICAL MANIFESTATIONS

9. Lumbar disc protrusion

    9.1. In the classical acute case, the onset is sudden following a history of spinal strain and the clinical picture is clearly defined.

9.2. Severe low back pain with restriction of spinal movements coinciding with a tear of the annulus is followed after a few days by sciatic pain radiating into one or other lower limb, indicating that the extruded disc material has impinged on adjacent nerve roots. The pain is aggravated by coughing or sneezing.

9.3. Paraesthesia of the affected limb, most often described as "pins and needles", is present at one time or another in the majority of cases and some degree of muscle wasting is frequently observed. Rarely, flaccid paralysis and urinary symptoms are encountered.

9.4. Fluctuation or intermittency of the symptoms is a characteristic feature.

9.5. In other cases, a history of strain or trauma may be lacking, the back pain may begin gradually and may not radiate to the lower limb. Occasionally, sciatic pain is felt in the lower limb without noticeable back pain.

9.6. Symptoms usually subside in a few weeks and recovery from symptoms may occur although the disc protrusion remains. Recurrence of symptoms is common and may occur at frequent intervals.

10. Cervical disc protrusion

10.1. Disc protrusion in the cervical region is much less common than in the lumbar region.

10.2. The usual symptoms are pain and stiffness of the neck followed by pain radiating over the shoulder and throughout the length of the upper limb. Tingling and numbness of the fingers is common and muscle wasting may be a marked feature. Rarely, symptoms of cord compression may be present.

10.3. There is a strong tendency to spontaneous recovery but symptoms may persist with decreasing severity for six months or more.

AETIOLOGY

11. Disc protrusion may result from a severe spinal injury.

12. In the majority of cases, disc protrusion is preceded by spontaneous age-related degeneration of the disc as described at paragraph 5 above.

13. Disc protrusion may occur at any time in adult life, lumbar disc protrusion being common in the 20-40 year age group while cervical disc protrusion usually occurs in middle age.

14. The actual tear in the annulus may be caused by trauma or strain, the most common type being a sudden strain such as lifting a heavy weight with the spine flexed, a fall from a height in a sitting position or, in the case of the cervical spine, a whiplash injury or twisting strain of the neck. It may also be due to the repetitive trauma of heavy labour such as lifting or digging. A history of trauma is obtainable in about 60% of cases.

15. 80% of cases occur in males, the sex incidence being attributable to the frequency of occupational trauma amongst males. In females, it is frequently associated with pregnancy and labour.

CONCLUSION

16. Intervertebral discs in the lower lumbar and cervical regions of the spine are particularly prone to undergo degeneration with increasing age, which may be accompanied by disc protrusion with or without a history of trauma to the spine. Severe spinal trauma can cause protrusion of an apparently normal disc.

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