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Fine needle aspiration cytology in diagnosis of soft tissue tumours

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Abstract

Soft tissues are the non-epithelial extra-skeletal connective tissues of the body, excluding supporting tissues of the internal organs, glia and hematopoietic tissues. Soft tissue tumours (STT) are generally classified according to their resemblance to the presumptive normal mesenchymal cell counterparts. STT have been diagnosed routinely by histopathology, which is considered as gold standard for their evaluation. However, in the recent times where 'needle is preceding the scalpel' and the biopsy material is getting limited, it would be prudent to discuss the role and scope of FNAC in diagnosing STT.

Keywords: Fine needle aspiration, cytology, tumors

Introduction

Soft tissues are the non-epithelial extra-skeletal connective tissues of the body, excluding supporting tissues of the internal organs, glia and hematopoietic tissues. Soft tissue tumours (STT) are generally classified according to their resemblance to the presumptive normal mesenchymal cell counterparts [1]. Soft tissue tumours are not very common. The ratio of benign to malignant STT is 100:1. The cells of origin are varying, so the diagnosis of STT is difficult at times. As a result of morphological overlap and biological heterogeneity, these tumours pose a significant diagnostic challenge [2-5]. STT have been diagnosed routinely by histopathology, which is considered as gold standard for their evaluation. However, in the recent times where 'needle is preceding the scalpel' and the biopsy material is getting limited, it would be prudent to discuss the role and scope of FNAC in diagnosing STT [6-8].

Aims and Objectives

To study the role of fine needle aspiration cytology in diagnosis of soft tissue tumours

Materials and Methods

Sixty cases were studied in the Department of Pathology, Kanachur Institute of Medical Sciences, FNAC was done for the diagnosis of soft tissue tumors and reported.

Inclusion criteria

Only soft tissue tumors

Exclusion Criteria

Patients on chemo or radio therapy.

Results

Table 1: Sex Distribution

| | |
|--------|----|
| Male | 28 |
| Female | 32 |

Table 2: Age distribution

| | |
|-------------|---------------|
| Mean age | Std deviation |
| 58.98 years | 11.53 years |

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Table 3: Site

| | |
|-----------------|----|
| Thorax | 3 |
| Upper limb | 2 |
| Lower limb | 41 |
| Infra umbilical | 07 |
| Head | 1 |
| Forehead | 1 |
| Neck | 4 |
| back | 1 |

Table 4: Cytological diagnosis

| | |
|--|----|
| Schwannoma | 2 |
| Lymphangioma | 7 |
| Infantile Fibromatosis | 6 |
| Benign spindle cell lesion | 3 |
| Benign Fibrous Histiocytoma | 1 |
| Synovial Sarcoma | 4 |
| Biphasic | 1 |
| Desmoid Fibromatosis | 1 |
| Ganglion Cyst | 4 |
| Giant Cell Tumour of tendon sheath | 3 |
| Gastro intestinal stromal tumour | 2 |
| Haemangioma | 17 |
| Undifferentiated pleomorphic sarcoma | 08 |
| Malignant peripheral nerve sheath tumour | 1 |

Discussion

Cancer starts when cells start to grow out of control. Cells in nearly any part of the body can become cancer and can spread to other areas. There are many types of soft tissue tumors, and not all of them are cancerous. Many benign tumors are found in soft tissues. The word benign means they're not cancer. These tumors can't spread to other parts of the body. Some soft tissue tumors behave in ways between a cancer and a non-cancer. These are called intermediate soft tissue tumors. When the word sarcoma is part of the name of a disease, it means the tumor is malignant (cancer). A sarcoma is a type of cancer that starts in tissues like bone or muscle. Bone and soft tissue sarcomas are the main types of sarcoma. Soft tissue sarcomas can develop in soft tissues like fat, muscle, nerves, fibrous tissues, blood vessels, or deep skin tissues. They can be found in any part of the body. Most of them start in the arms or legs. They can also be found in the trunk, head and neck area, internal organs, and the area in back of the abdominal (belly) cavity (known as the retro peritoneum). Sarcomas are not common tumors. Sarcomas that most often start in bones, such as osteosarcomas, and sarcomas that are most often seen in children, such as the Ewing Family of Tumors and Rhabdomyosarcoma, are not covered here.

Types of soft tissue sarcomas: There are more than 50 different types of soft tissue sarcomas. Some are quite rare, and not all are listed here: Adult Fibro sarcoma usually affects fibrous tissue in the legs, arms, or trunk. It's most common in people between the ages of 20 and 60, but can occur in people of any age, even in infants. Alveolar soft-part sarcoma is a rare cancer that mostly affects young adults. These tumors most commonly start in legs. Angiosarcoma can start in blood vessels (hemangiosarcomas) or in lymph vessels (Lymphangiosarcomas). These tumors sometimes start in a part of the body that has been treated with radiation. Angiosarcomas are sometimes seen in the breast after

radiation therapy and in limbs with lymphedema. Clear cell sarcoma is a rare cancer that often starts in tendons of the arms or legs. Under the microscope, it has some features of malignant melanoma, a type of cancer that starts in pigment-producing skin cells. How cancers with these features start in parts of the body other than the skin is not known. Desmoplastic small round cell tumor is a rare sarcoma of teens and young adults. It's found most often in the abdomen (belly). Epithelioid sarcoma most often starts in tissues under the skin of the hands, forearms, feet, or lower legs. Teens and young adults are often affected. Fibromyxoid sarcoma, low-grade is a slow-growing cancer that most often starts as a painless growth in the trunk or arms and legs (particularly the thigh). It is more common in young to middle aged adults. It is sometimes called an Evans' tumor. Gastrointestinal stromal tumor (GIST) is a type of sarcoma that starts in the digestive tract. See Gastrointestinal Stromal Tumor (GIST) for more details. Kaposi sarcoma is a type of sarcoma that starts in the cells lining lymph or blood vessels. See Kaposi Sarcoma. Leiomyosarcoma is a type of cancer that starts in smooth muscle tissue. These tumors often start in the abdomen, but they can also start in other parts of the body, such as the arms or legs, or in the uterus (see Uterine Sarcoma). Liposarcomas are malignant tumors of fat tissue. They can start anywhere in the body, but they most often start in the thigh, behind the knee, and inside the back of the abdomen (belly). They occur mostly in adults between 50 and 65 years old. Malignant mesenchymoma is a rare type of sarcoma that shows features of fibro sarcoma and features of at least 2 other types of sarcoma. Malignant peripheral nerve sheath tumors include neurofibrosarcomas, malignant schwannomas, and neurogenic sarcomas. These are sarcomas that start in the cells that surround a nerve. Myxofibrosarcomas, low-grade are most often found in the arms and legs of elderly patients. They are most common in or just under the skin and there might be more than one tumor. Rhabdomyosarcoma is the most common type of soft tissue sarcoma seen in children. See Rhabdomyosarcoma. Synovial sarcoma is a malignant tumor of the tissue around joints. The most common locations are the hip, knee, ankle, and shoulder. This tumor is more common in children and young adults, but it can occur in older people. Undifferentiated pleomorphic sarcoma (UPS) was once called malignant fibrous Histiocytoma (MFH). It's most often found in the arms or legs. Less often, it can start inside at the back of the abdomen (the retro peritoneum). This sarcoma is most common in older adults. It mostly tends to grow into other tissues around the place it started, but it can spread to distant parts of the body.

Intermediate soft tissue tumors

These may grow and invade nearby tissues and organs, but they tend to not spread to other parts of the body. They are Dermato fibrosarcoma protuberans is a slow-growing cancer of the fibrous tissue beneath the skin, usually in the trunk or limbs. It grows into nearby tissues but rarely spreads to distant sites. Fibromatosis is the name given to fibrous tissue tumor with features in between fibrosarcoma and benign tumors such as fibromas and superficial fibromatosis. They tend to grow slowly but, often, steadily. They are also called desmoid tumors, as well as the more scientific name musculoaponeurotic fibromatosis or just aggressive

fibromatosis. They rarely, if ever, spread to distant sites, but they do cause problems by growing into nearby tissues. They can sometimes be fatal. Some doctors consider them a type of low-grade Fibrosarcoma but others believe they are a unique type of fibrous tissue tumors. Certain hormones, like estrogen, make some desmoid tumors grow. Anti-estrogen drugs are sometimes useful in treating desmoids that cannot be completely removed by surgery. Hemangioendothelioma is a blood vessel tumor that is considered a low-grade cancer (meaning it grows slowly and is slow to spread). It does grow into nearby tissues and sometimes can spread to distant parts of the body. It may start in soft tissues or in internal organs, such as the liver or lungs. Infantile fibrosarcoma is the most common soft tissue sarcoma in children under one year of age. It tends to be slow-growing and is less likely to spread to other organs than adult fibrosarcomas. Solitary fibrous tumors are most often not cancer (benign) but can be cancer (malignant). Some start in the thigh, underarm, and pelvis. They can also start in the tissue surrounding the lung (called the pleura). Many tumors that were once called hemangiopericytomas are now considered solitary fibrous tumors.

Benign soft tissue tumors and many benign tumors, or tumors that are not cancer, can start in soft tissues. These include: Elastofibromas: benign tumors of fibrous tissue. Fibromas: benign tumors of fibrous tissue. Fibrous histiocytomas: benign tumors of fibrous tissue. Glomus tumors: benign tumors that occur near blood vessels. Granular cell tumors: usually benign tumors in adults that often start in the tongue but can be found almost anywhere in the body. Hemangiomas: benign tumors of blood vessels. Hibernomas: benign tumors of fat tissue. Lipomas: very common benign tumors of fat tissue. Leiomyomas: benign tumors of smooth muscle that can be found anywhere in the body but are very common in the walls of the uterus where they are known as fibroids. Lipoblastomas: benign fat tissue tumors most often seen in children. Lymphangiomas: benign tumors of lymph vessels. Myxomas: benign tumors that usually are in muscles but do not start from muscle cells. Neurofibromas: tumors of nerve tissue that are usually benign. Neurofibromas of large nerves, such as those in the upper arms or neck can become cancer. Neurofibromas are very common in people with an inherited condition called neurofibromatosis (also called von Recklinghausen disease) They're much less common in people without this condition.. Neuromas: benign tumors of nerves that can be painful

PEComas: a family of tumors made up of abnormal cells called perivascular epithelial cells. Although most of these tumors are benign, some rare PEComas are malignant (cancer). The most common of these tumors are angiomyolipoma and Lymphangioliomyoma.

Angiomyolipoma is a benign tumor that most often affects the kidney. Lymphangioliomyomatosis (or LAM) is a rare disease of women in which the many lymphangioliomyoma tumors grow into the lung tissue and interfere with lung function. Rhabdomyomas: benign tumors of skeletal and heart muscle. Schwannomas (Neurilemmomas): benign tumors of the cells that coat nerves. Tenosynovial giant cell tumors (also called nodular tenosynovitis): benign tumors of joint tissue

Spindle cell tumor and spindle cell sarcoma are descriptive names used because the cells look long and narrow under

the microscope. Spindle cell tumor is not a specific diagnosis or a specific type of cancer. The tumor may be a sarcoma, or it can be sarcomatoid — meaning another type of tumor (like a carcinoma) that looks like a sarcoma under the microscope.

Tumor-like conditions of soft tissue: Some changes in soft tissues are caused by inflammation or injury and can form a mass that looks like a soft tissue tumor. Unlike a real tumor, they don't come from a single abnormal cell, they have limited ability to grow or spread to nearby tissues, and never spread through the bloodstream or lymph system to other parts of the body. Nodular fasciitis and myositis ossificans are 2 examples which affect tissues under the skin and muscle tissues, respectively.

Conclusion

The FNAC is an ideal gold standard procedure to diagnose the soft tissue tumor.

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